SOIL SURVEY OF

Wayne County, North Carolina

United States Department of Agriculture
Soil Conservation Service
in cooperation with
North Carolina Agricultural Experiment Station.

Issued June 1974

Major fieldwork for this soil survey was done in the period 1964–67. Soil names and descriptions were approved in 1968. Unless otherwise indicated, statements in the publication refer to conditions in the county in 1967. This survey was made cooperatively by the Soil Conservation Service and the North Carolina Agricultural Experiment Station. It is part of the technical assistance furnished to the Wayne Soil and Water Conservation District.

Either enlarged or reduced copies of the soil map in this publication can be made by commercial photographers, or they can be purchased on individual order from the Cartographic Division, Soil Conservation Service, United States Department of Agriculture, Washington, D.C. 20250.

HOW TO USE THIS SOIL SURVEY

THIS SURVEY contains information that can be applied in managing farms, ranches, and woodlands; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

Locating Soils

All the soils of Wayne County are shown on the detailed map at the back of this publication. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with a number on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information. This guide lists all the soils of the county in alphabetic order by map symbol. It shows the page where each soil is described and the page for the capability unit in which the soil has been placed.

Individual colored maps showing the relative suitability or degree of limitation of soils for many specific purposes can be developed by using the soil map and the information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils from the soil descriptions and from the discussions of the capability units and woodland groups.

Foresters and others can refer to the section "Use of the Soils for Woodland," where the soils of the county are grouped according to their suitability for trees.

Game managers, sportsmen, and others can find information about soils and wildlife in the section "Use of the Soils for Wildlife."

Engineers and builders can find, under "Engineering Uses of the Soils," tables that contain test data, estimates of soil properties, and information about soil features that affect engineering practices.

Scientists and others can read about how the soils formed and how they are classified in the section "Formation and Classification of the Soils."

Newcomers to Wayne County may be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the section "General Nature of the County."

Cover picture: Soybeans on Johnston loam.

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Contents

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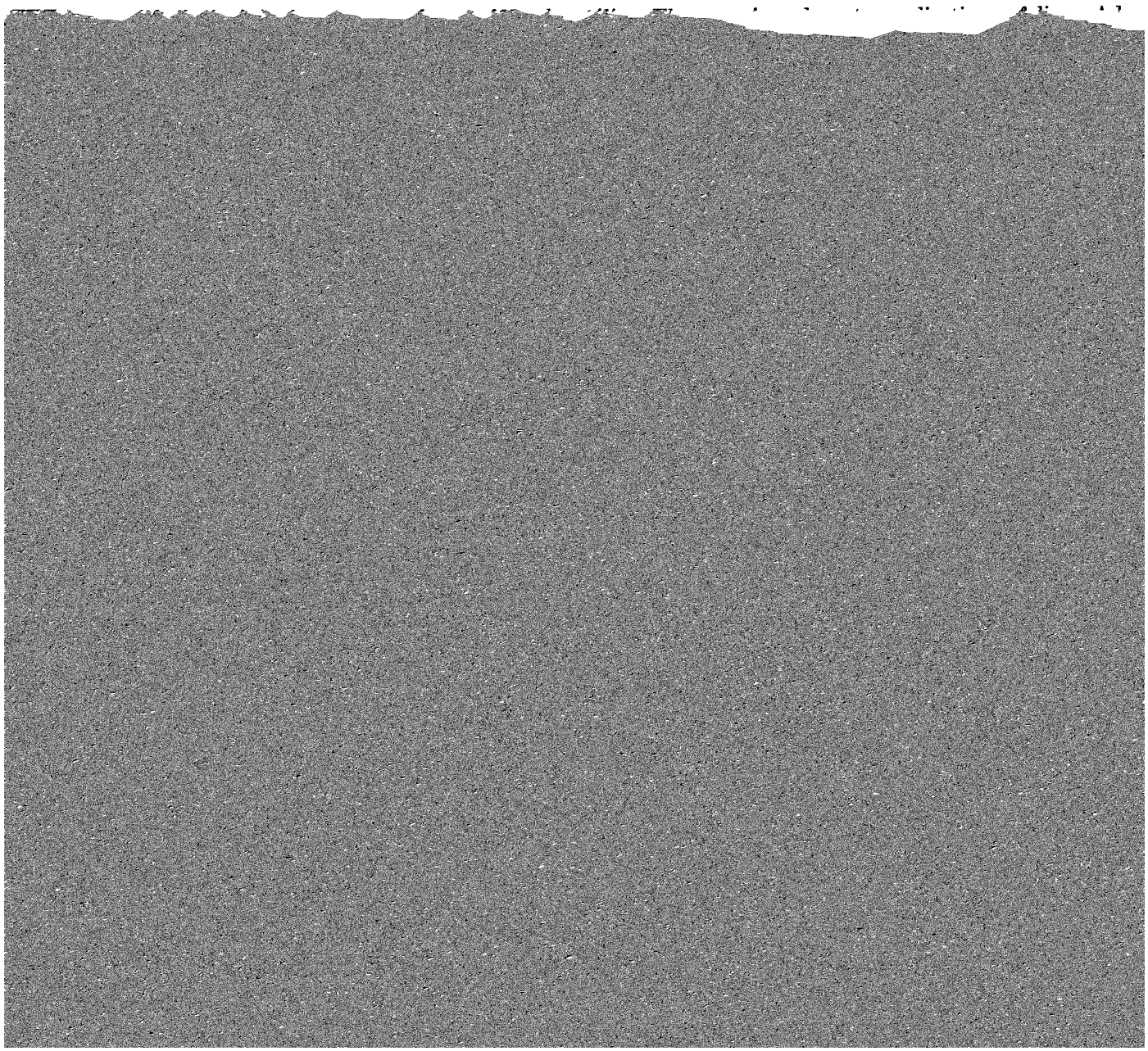
SOIL SURVEY OF WAYNE COUNTY, NORTH CAROLINA

BY WILLIAM L. BARNHILL, ROY A. GOODWIN, JR., MARCUS R. BOSTIAN, NILES A. McLODA, GARTH W. LEISHMAN, AND RICHARD J. SCANU, SOIL CONSERVATION SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION



After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that help in drawing boundaries accurately. The soil map in the back of this publication was prepared from the aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil phase.

While a soil survey is in progress, samples of soils are taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soil in other places are assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil. Yields under defined management are estimated for all the soils.

But only part of a soil survey is done when the soils have been named, described, and delineated on the map, and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in such a way as to be readily useful to different groups of users, among them farmers, managers of woodland and rangeland, and engineers.

On the basis of yield and practice tables and other data, the soil scientists set up trial groups. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others, then adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and management.

General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in Wayne County. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area, or in planning engineering works, recreational facilities, and community developments. It is not a suitable map for planning the management of a farm or field or for selecting the exact location of a road, building, or similar structure, because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

The seven soil associations in Wayne County are described in the following pages.

1. *Norfolk-Goldsboro-Aycock association*

Well drained and moderately well drained, nearly level to sloping soils that have a friable sandy loam to clay loam subsoil; on uplands

This soil association consists of broad, slightly convex divides that are rounded along the drainageways. The areas are dissected by many fairly deep drainageways. The side slopes are short.

This association makes up about 37 percent of Wayne County. It is about 35 percent Norfolk soils, 8 percent Goldsboro soils, and 5 percent Aycock soils. Minor soils make up the remaining 52 percent.

Norfolk soils are well drained. Their surface layer ranges from grayish-brown loamy sand in the uneroded areas to yellowish-brown sandy loam in the eroded areas. The subsoil is friable sandy clay loam to sandy loam that is commonly yellowish brown and brownish yellow, but ranges from light yellowish brown to strong brown.

Goldsboro soils are moderately well drained. Their surface layer is grayish-brown to dark grayish-brown loamy sand. The subsoil is pale-brown to yellowish-brown, friable sandy clay loam to sandy loam and has gray mottles within a depth of 30 inches.

Aycock soils are well drained. The surface layer ranges from grayish-brown to light yellowish-brown very fine sandy loam. The subsoil is yellowish-brown or brownish-yellow to strong-brown, friable loam to clay loam.

The minor soils are mainly Lynchburg, Rains, Wagram, Dragston, Weston, Nahunta, Exum, Bibb, Ruston, and Craven soils.

Most of this association is cultivated, and a small acreage is pastured. The major soils are well suited to all locally grown crops, mainly corn, tobacco, soybeans, small grain, and some truck crops.

Slope and a seasonal high water table are the chief hazards limiting the use of the major soils of this association for farm and nonfarm purposes.

2. *Wagram-Kenansville association*

Well-drained, nearly level to strongly sloping soils that have a friable sandy loam to sandy clay loam subsoil; on uplands and terraces

This soil association consists of broad, smooth divides that are rounded near drainageways. The areas of this association are dissected by fairly deep drainageways.

This association makes up about 20 percent of Wayne County. It is about 40 percent Wagram soils and 30 percent Kenansville soils. The remaining 30 percent is minor soils.

Wagram soils are well drained. Their surface layer is grayish-brown to gray loamy sand 20 to 40 inches thick. The subsoil is yellowish-brown or brownish-yellow to strong-brown, friable sandy clay loam to sandy loam.

Kenansville soils are well drained. Their surface layer ranges from grayish-brown to gray loamy sand 20 to 30 inches thick. The subsoil is light yellowish-brown to strong-brown, dominantly friable sandy loam.

The minor soils are mainly Dragston, Weston, Lynchburg, Rains, Torhunta, Bibb, Troup, Norfolk, and Lucy soils.

Most of this association is cultivated, and a small acreage is pastured. The major soils are suited to fairly well suited to most locally grown crops. The main crops are corn, soybeans, tobacco, small grain, and some truck crops.

Slope, low available water capacity, and soil blowing are the chief hazards limiting the use of the major soils of this association for farm and nonfarm purposes.

3. *Lakeland-Troup association*

Excessively drained to well-drained, nearly level to gently sloping soils that are sandy throughout or have a friable sandy loam to sandy clay loam subsoil; on uplands and terraces

This soil association consists of long, broad divides that are slightly convex and undulating. It is dissected by a few deep drainageways.

This association makes up about 10 percent of Wayne County. It is about 35 percent Lakeland soils and about 30 percent Troup soils. The remaining 35 percent is minor soils.

Lakeland soils are excessively drained sand. Their surface layer is dark-gray to pale-brown, loose sand 2 to 8 inches thick. The underlying layers, to a depth of more than 72 inches, are loose sand that is light yellowish brown to strong brown in the upper part and yellow to light gray in the lower part.

Troup soils are well drained. Their surface layer is grayish-brown to light-gray, loose sand 40 to 72 inches thick. The subsoil is brownish-yellow and strong-brown to yellowish-red, friable sandy loam to sandy clay loam.

The minor soils are mainly Kenansville, Wagram, Dragston, Weston, Craven, Kalmia, Rimini, and Bibb soils.

Most of this association is wooded. Longleaf pine and turkey oak are the main trees. Most of the cleared areas are idle land. The major soils are fairly well suited to a few locally grown crops, mainly corn and soybeans.

Very low fertility, very low available water capacity, and soil blowing are the chief hazards limiting the use of the major soils in this association for farm and nonfarm purposes.

4. *Rains-Torhunta-Liddell association*

Poorly drained to very poorly drained, nearly level soils that have a friable and very friable sandy clay loam to sandy loam subsoil; on uplands and terraces

This soil association consists of broad, smooth, flat areas at the heads of permanent streams and in oval depressions. There are only a few intermittent streams.

This association makes up about 15 percent of Wayne County. It is about 45 percent Rains soils, 10 percent Torhunta soils, and 7 percent Liddell soils. The remaining 38 percent is minor soils.

Rains soils are poorly drained. Their surface layer is sandy loam and ranges from dark gray or gray to very dark gray. The subsoil is gray to light-gray, friable sandy clay loam to sandy loam.

Torhunta soils are very poorly drained. Their surface layer is black to very dark gray loam. The subsoil is dark grayish-brown to gray, friable sandy loam or fine sandy loam.

Liddell soils also are poorly drained. Their surface layer is dark gray to very dark gray very fine sandy loam. The subsoil is gray to light-gray, very friable, very fine sandy loam to silt loam.

The minor soils are chiefly Lynchburg, Goldsboro, Dragston, Weston, Nahunta, Myatt, and Pantego soils.

Most of this association is wooded, mainly in loblolly pine. The rest of the acreage is used mostly for corn, soybeans, and pasture. The major soils, if artificially drained, are well suited or suited to these crops. Wetness is a severe limitation mainly because of the seasonal high water table and surface ponding. Surface and subsurface drainage is needed before the major soils can be cultivated or pastured.

The chief hazards limiting the use of the major soils in this association for farm and nonfarm purposes are the seasonal high water table, surface ponding, and infrequent floods.

5. *Wickham-Johns association*

Well-drained to somewhat poorly drained, nearly level to gently sloping soils that have a friable sandy loam to clay loam subsoil; on terraces

This association consists of fairly broad, long, low ridges and depressions on stream terraces. It is on the terrace along the Neuse and Little Rivers.

This association makes up about 5 percent of Wayne County. It is about 32 percent Wickham soils and 20 percent Johns soils. The remaining 48 percent is minor soils.

Wickham soils are well drained. Their surface layer is grayish-brown to strong-brown loamy sand to sandy loam. The subsoil is dominantly yellowish-red, friable clay loam to sandy loam.

Johns soils are somewhat poorly drained. Their surface layer ranges from dark-gray to grayish-brown sandy loam. The subsoil is friable sandy clay loam to sandy loam and is pale brown or light yellowish brown and yellowish brown in the upper part and gray in the lower part.

The minor soils are mainly Kenansville, Kalmia, Dragston, Weston, Leaf, Torhunta, and Bibb soils.

Most of this association is cultivated and pastured. The rest is wooded. The Wickham soils are well suited to all major crops grown locally. Where artificially drained, Johns soils are well suited to most crops. The important crops are corn, soybeans, small grain, tobacco, and truck crops. The forest type is loblolly pine and mixed hardwoods.

Slope, a seasonal high water table, and infrequent floods are the chief hazards limiting the use of the major soils in this association for farm and nonfarm purposes.

6. *Johnston-Chewacla-Kinston association*

Very poorly drained to somewhat poorly drained, nearly level soils that have a friable sandy loam to clay loam subsoil; on flood plains.

This association consists of soils on flood plains along the major streams. This association makes up about 8 percent of Wayne County. It is about 40 percent Johnston soils, 10 percent Chewacla soils, and 10 percent Kinston soils. The remaining 40 percent is minor soils.

Johnston soils are very poorly drained. Their surface layer is loam that ranges from black to very dark gray. The subsoil is grayish-brown to gray, friable sandy loam to loam.

Chewacla soils are somewhat poorly drained. Their surface layer is dark grayish-brown to brown loam. The subsoil is friable sandy loam to clay loam. The upper part is pale brown, light yellowish brown, or brown mottled with gray. The lower part is gray mottled with yellowish brown and strong brown.

Kinston soils are poorly drained. Their surface layer is dark-gray to gray loam. The subsoil is friable loam to clay loam that is dominantly gray but ranges from dark gray to light gray.

The minor soils are mainly Bibb, Pamlico, Lumbee, and Leaf soils.

Nearly all of this association is wooded, and the principal forest type is mixed hardwoods. Most of the cleared acreage is cultivated to corn and soybeans. The soils are

sandy clay loam to sandy loam. The solum is underlain by sandy sediments at a depth of about 40 inches.

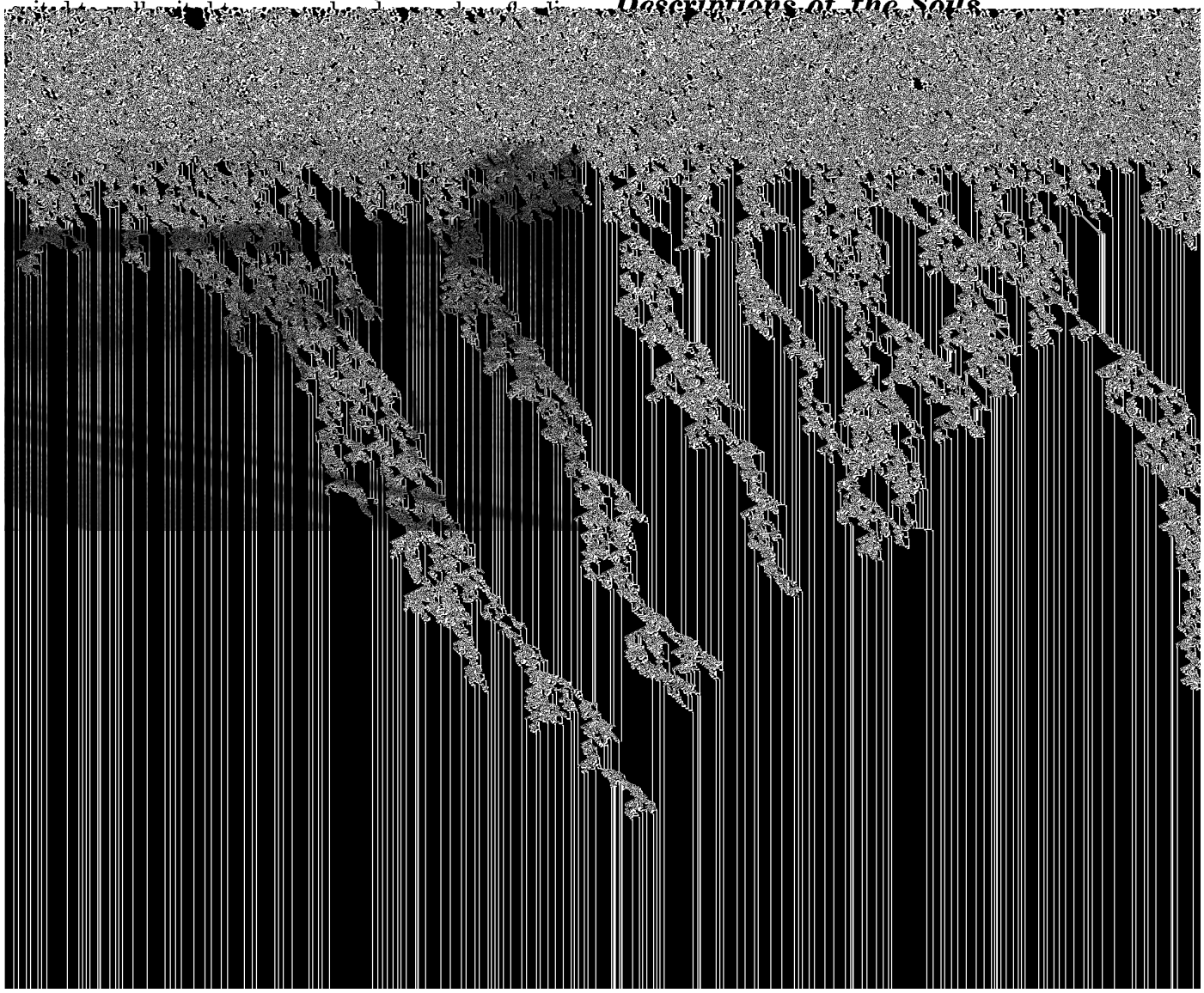
Torhunta soils are very poorly drained. Their surface layer is black to very dark gray loam. The subsoil is dark grayish-brown to gray, friable sandy loam or fine sandy loam.

The minor soils are mainly Weston, Pantego, Leaf, Dragston, and Johns soils.

Most of this association is wooded. The forest type is loblolly pine and mixed hardwoods. Cultivated areas are used chiefly for corn and soybeans. Where artificially drained, these soils are suited to well suited to a few locally grown crops.

A seasonal high water table, surface ponding, and infrequent floods are the chief hazards limiting the use of the major soils in this association for farm and nonfarm purposes.

Descriptions of the Soils



Chewacla Series

The Chewacla series consists of somewhat poorly drained, nearly level soils on flood plains. These soils formed in recent alluvium. The seasonal high water table is about 1½ feet below the surface.

In a representative profile, the surface layer is dark grayish-brown and brown loam about 6 inches thick. The subsoil is a friable loam about 34 inches thick. The upper part is pale brown mottled with yellowish brown and gray. The lower part is gray mottled with yellowish brown. Below the subsoil, to a depth of about 75 inches, is gray, friable loam and sandy loam mottled with strong brown.

Chewacla soils are low in natural fertility and organic-matter content. They have moderate permeability, high available water capacity, and low shrink-swell potential. The soils are flooded very frequently, but only for brief periods. Crops grown on these soils respond well to lime and fertilizer.

Chewacla soils are not important for farming. Most of the acreage is in forest, and only a small acreage is in pasture and cultivated crops.

A seasonal high water table and very frequent floods are the major hazards limiting the use of these soils.

Representative profile of Chewacla loam, 1 mile west of Goldsboro and 0.3 mile north of Little River Bridge over State Route 581, 100 feet east of Little River, in a forested area:

A11—0 to 2 inches, dark grayish-brown (10YR 4/2) loam; weak, medium and coarse, granular structure; very friable; many small roots; many small pores; many small flakes of mica; strongly acid; clear, wavy boundary.

A12—2 to 6 inches, brown (10YR 5/3) loam; weak, medium, granular structure; friable; many small roots; many small pores; few fine flakes of mica; very strongly acid; gradual, wavy boundary.

B1—6 to 25 inches, pale-brown (10YR 6/3) loam; common, fine, distinct, yellowish-brown mottles, and common, coarse, distinct, gray (10YR 6/1) mottles; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; common small roots; common small pores; very strongly acid; gradual, wavy boundary.

B2g—25 to 40 inches, gray (10YR 6/1) loam; many, medium, distinct, yellowish-brown (10YR 5/6) mottles; weak, medium, subangular blocky structure; friable, slightly sticky and slightly plastic; silt coatings in pores; very strongly acid; gradual, wavy boundary.

C1g—40 to 50 inches, gray (10YR 6/1) loam; common, fine, distinct, strong-brown mottles; massive; friable, slightly sticky and slightly plastic; few small mica flakes; very strongly acid; gradual, wavy boundary.

C2g—50 to 75 inches, gray (10YR 6/1) loam and sandy loam; common, medium, distinct, strong-brown (7.5YR 5/6) mottles; massive; friable, slightly sticky and slightly plastic; few small mica flakes; very strongly acid.

The solum ranges from 36 to 60 inches in thickness. The A horizon ranges from 6 to 10 inches in thickness and is dark grayish brown to brown. The B horizon ranges from 30 to 50 inches in thickness and is sandy loam to clay loam. It is pale brown, light yellowish brown, or brown to gray and is mottled with light gray, yellowish brown, and strong brown. The lower part of the B horizon is grayer than the upper part. The C horizon is gray and ranges from loam to gravelly loamy sand.

Chewacla loam (Ch).—This is a somewhat poorly drained soil on flood plains. Slopes are 0 to 2 percent. This soil is in long bands, 100 to about 700 feet wide, along the larger streams. The surface layer is dark grayish-brown to brown loam 6 to 10 inches thick. The subsoil is friable sandy loam to clay loam 30 to 50 inches thick. The upper part is pale brown, light yellowish brown, or brown mottled with gray and the lower part is gray mottled with yellowish brown and strong brown.

Included in mapping were a few areas of Chewacla soils that have a silt loam or sandy loam surface layer. Areas of soils on flood plains that are sandy throughout and areas of Kinston and Bibb soils were also included.

Infiltration is moderate, and surface runoff is slow. This soil is easy to keep in good tilth and can be worked throughout a fairly wide range of moisture content.

This soil is well suited to a few locally grown crops, chiefly corn and soybeans. Wetness is a severe limitation because of the seasonal high water table and very frequent floods. Artificial drainage and protection from floods are needed for most crops. Nearly all the acreage is in forest, and only a small acreage is cleared. The trees are chiefly mixed hardwoods and a few pines. Capability unit IIIw–5; woodland group 1w8.

Coxville Series

The Coxville series consists of poorly drained, nearly level soils on broad, smooth flats, on terraces, and in slight depressions between streams on uplands. These soils formed in Coastal Plain and stream sediments. The seasonal high water table is at the surface.

In a representative profile, the surface layer is dark-gray loam about 9 inches thick. The subsoil is about 51 inches thick and is a grayish-brown, friable sandy clay loam in the upper part. It is gray, firm sandy clay in the middle part, and gray, friable sandy clay loam in the lower part. Below the subsoil, to a depth of about 70 inches, in gray, friable sandy loam.

Coxville soils are medium in natural fertility and low in organic-matter content. They have moderately slow permeability, medium available water capacity, and moderate shrink-swell potential. Crops grown on these soils respond well to lime and fertilizer.

Coxville soils are not important for farming. Most of the acreage is forested. A seasonal high water table and surface ponding are the major hazards limiting the use of these soils.

Representative profile of Coxville loam, 6 miles southeast of Goldsboro, 50 feet northwest of intersection of Roads 1911 and 1960, 10 feet east of Road 1960, in a cultivated field:

Ap—0 to 9 inches, dark-gray (10YR 4/1) loam; weak, medium, granular structure; very friable; many small roots; very strongly acid; abrupt, smooth boundary.

B1—9 to 16 inches, grayish-brown (10YR 5/2) sandy clay loam; weak, medium, granular structure; friable; many small roots; common small and large pores filled with dark-gray surface soil; very strongly acid; clear, wavy boundary.

B2tg—16 to 42 inches, gray (10YR 5/1) sandy clay; common, fine, distinct, brownish-yellow mottles; moderate, fine, subangular blocky structure; firm, sticky and plastic; few small roots in upper part; few pores filled with dark-gray surface soil; thin dis-

continuous clay films on faces of peds; very strongly acid; clear, wavy boundary.

B3tg—42 to 60 inches, gray (10YR 6/1) sandy clay loam; few, fine, distinct, yellowish-brown mottles; weak, fine, subangular blocky structure; friable, sticky and plastic; thin discontinuous clay films on faces of peds; extremely acid; clear, irregular boundary.

Cg—60 to 70 inches, gray (10YR 6/1) sandy loam; massive; friable, slightly sticky and slightly plastic; very strongly acid.

Coxville soils have a solum that is about 60 inches thick. The A horizon is 6 to 15 inches thick and ranges from gray to very dark gray. The very dark gray part of the A horizon, where present, is less than 6 inches thick. The B horizon is more than 50 inches thick and is sandy clay loam to sandy clay. The B2 and B3 horizons are gray mottled with brownish yellow, strong brown, and red. The C horizon is commonly light gray and ranges from sandy loam to sandy clay.

Coxville loam (Co).—This is a poorly drained soil on flats and in slight depressions on the uplands and terraces. Slopes are 0 to 2 percent. The mapped areas are irregular in shape and range from 30 to 40 acres in size. The surface layer is gray to very dark-gray loam 6 to 15 inches thick. The very dark gray part of the surface layer, where present, is less than 6 inches thick. The subsoil is gray, firm, sandy clay to friable sandy clay loam more than 50 inches thick. It is mottled with brownish yellow, strong brown, and red.

Included with this soil in mapping were a few areas of Coxville soils that have a sandy loam surface layer. Also included were some areas of Lumbee, Rains, Myatt, and Leaf soils.

Infiltration is moderate and surface runoff is slow. The water ponds in some places. This soil is difficult to keep in good tilth and can be worked within only a narrow range of moisture content. The surface layer becomes cloddy if worked when wet.

Where artificially drained, this soil is well suited to a few locally grown crops, mainly corn and soybeans. Wetness is a severe limitation because of the seasonal high water table and surface ponding. In cultivated areas, surface and subsurface drainage is needed. Most of the acreage is forested, and the rest is cultivated or pastured. The trees are mainly loblolly pine. Capability unit IIIw-2; woodland group 2w9.

Craven Series

The Craven series consists of moderately well drained, gently sloping to sloping soils on rounded sides of divides. These soils formed in Coastal Plain sediments. The seasonal high water table remains below a depth of about 2½ feet.

In a representative profile, the surface layer is light yellowish-brown sandy loam about 6 inches thick. The subsoil is brownish yellow and is about 44 inches thick. It is very firm clay in the upper part and is firm clay loam mottled with yellow, light gray, and red in the lower part. Below the subsoil, to a depth of about 60 inches, is mottled brownish-yellow, yellow, light-gray, and red, firm clay loam.

Craven soils are medium in natural fertility and low in organic-matter content. They have slow permeability, medium available water capacity, and high shrink-swell potential. Crops grown on these soils respond well to lime and fertilizer.

Craven soils are not important for farming. Most of the acreage is wooded. Slope and slow permeability are the major limitations for use.

Representative profile of Craven sandy loam, 2 to 6 percent slopes, eroded, 1 mile south of Fremont, 0.7 mile west of intersection of U.S. Highway No. 117 and Road 1361, 300 feet south of Road 1361, in a cultivated field:

Ap—0 to 6 inches, light yellowish-brown (10YR 6/4) sandy loam; weak, medium, granular structure; friable; many small roots; many small pores; medium acid; abrupt, smooth boundary.

B21t—6 to 22 inches, brownish-yellow (10YR 6/6) clay; few, medium, prominent, red (2.5YR 5/8) mottles; strong, fine and medium, angular blocky structure; very firm, sticky and very plastic; thin, continuous, strong-brown clay films on faces of peds; many small roots between peds; strongly acid; gradual, wavy boundary.

B22t—22 to 32 inches, brownish-yellow (10YR 6/6) clay; few, medium, distinct, light-gray (10YR 7/1) mottles and common, medium, prominent, red (2.5YR 5/8) mottles; moderate, fine, angular blocky structure; very firm, sticky and very plastic; thin, continuous, strong-brown clay films on faces of peds; strongly acid; gradual, wavy boundary.

B3—32 to 50 inches, brownish-yellow (10YR 6/8) clay loam; common, medium, distinct, yellow (10YR 7/6), light-gray (10YR 7/1), and red (2.5YR 5/8) mottles; moderate, medium, angular blocky structure; massive in lower part; firm, sticky and plastic; thin strong-brown, clay films on faces of peds and in pores and cracks; few soft mineral grains; strongly acid; gradual, wavy boundary.

C—50 to 60 inches, mottled brownish-yellow (10YR 6/6), yellow (10YR 7/6), light-gray (10YR 7/1), and red (2.5YR 4/8) clay loam; massive; firm, sticky and plastic; strongly acid.

Craven soils have a solum ranging from 40 to 60 inches in thickness. The A horizon is 4 to 8 inches thick and is grayish brown in the uneroded areas to yellowish brown in the more eroded areas. The B horizon ranges from 36 to 52 inches in thickness and is very firm clay to firm clay loam. The B horizon ranges from brownish yellow to yellowish red mottled with gray, yellow, red, and strong brown. The C horizon is commonly mottled brownish yellow, yellow, light-gray, and red and ranges from sandy loam to clay loam.

Craven sandy loam, 2 to 6 percent slopes, eroded (CrB2).—This is a moderately well drained soil on smooth sides of divides. This soil has the profile described as representative for the series. The mapped areas are long and narrow and range from 5 to 25 acres in size. The surface layer is grayish brown in the less eroded areas to yellowish brown in the more eroded areas and is dominantly sandy loam 4 to 8 inches thick. In places, it is a mixture of material from the original surface layer and from the subsoil. The subsoil is brownish-yellow to yellowish-red, very firm clay to firm clay loam 36 to 52 inches thick. It is mottled with gray, yellow, red, and strong brown in the lower part.

Included with this soil in mapping were a few areas of Craven soils that have a loamy sand and very fine sandy loam surface layer and some severely eroded spots where the subsoil is exposed. Also included were some areas of Norfolk, Wagram, and Ruston soils.

Infiltration is moderately slow, and surface runoff is medium. Because of the thin surface layer, this soil is difficult to keep in good tilth and can be worked within only a narrow range of moisture content. The severely eroded spots crust as they dry after a hard rain or

become cloddy if worked when wet. This affects germination and causes poor or uneven crop growth.

This soil is suited to most locally grown crops and is used for corn, soybeans, and small grain. The erosion hazard is moderate because of slope and slow permeability. Conservation practices are needed to effectively control runoff and erosion in cultivated areas. Most of the acreage is forested, and the rest is cultivated and pastured. Capability unit IIe–3; woodland group 3w2.

Craven sandy loam, 6 to 10 percent slopes, eroded (CrC2).—This is a moderately well drained soil on short sides of divides. The mapped areas are narrow and long and range from 5 to 20 acres in size. The surface layer ranges from grayish brown in the less eroded areas to yellowish brown in the more eroded areas and is dominantly sandy loam 4 to 8 inches thick. In places, it is a mixture of material from the original surface layer and from the subsoil. The subsoil is brownish-yellow to yellowish-red, very firm clay to firm clay loam 36 to 52 inches thick. It is mottled with gray, yellow, red, and strong brown in the lower part.

Included with this soil in mapping were a few areas of Craven soils that have a surface layer of loamy sand or very fine sandy loam and some severely eroded spots where the subsoil is exposed. Also included were a few areas that have slopes greater than 10 percent. Some areas of Norfolk, Ruston, and Wagram soils were also included.

Infiltration is moderately slow, and surface runoff is rapid. Because the surface layer is thin, this soil is difficult to keep in good tilth and can be worked within only a narrow range of moisture content. The severely eroded spots crust as they dry after a hard rain or become cloddy if worked when wet. This affects germination and causes poor or uneven crop growth.

This soil is fairly well suited to most locally grown crops, but the size and shape of the mapped areas limit their use for cultivation. The cleared areas are used chiefly for pasture, small grain, and hay crops. The erosion hazard is severe because of slope and slow permeability. Intensive conservation practices are needed to control runoff and erosion in cultivated areas. Most of the acreage of this soil is forested, and the rest is chiefly cultivated or pastured. Capability unit IIIe–2; woodland group 3w2.

Dragston Series

The Dragston series consists of somewhat poorly drained, nearly level soils in smooth, flat areas on broad interstream divides on uplands and terraces. These soils formed in Coastal Plain and stream sediments. The seasonal high water table is about 1½ feet below the surface.

In a representative profile, the surface layer is dark-gray and light brownish-gray loamy sand about 12 inches thick. The subsoil is about 36 inches thick. The upper part is pale-brown and light yellowish-brown, very friable and friable sandy loam, and the lower part is grayish-brown, very friable loamy sand. Below the subsoil, to a depth of about 75 inches, is light-gray, loose sand.

Dragston soils are low in fertility and organic-matter content. They have moderately rapid permeability, medium available water capacity, and low shrink-swell potential. Crops grown on these soils respond well to lime and fertilizer.

Dragston soils are of minor importance for farming. About half of the acreage is cultivated, and the rest is pastured and forested. A seasonal high water table is the major limitation for use.

Representative profile of Dragston loamy sand, 14 miles south of Goldsboro, 0.3 mile southeast of intersection of Roads 1949 and 1744, 0.2 mile south of Road 1949, in a cultivated field:

Ap—0 to 8 inches, dark-gray (10YR 4/1) loamy sand; weak, medium, granular structure; very friable; many small roots; strongly acid; clear, smooth boundary.

A2—8 to 12 inches, light brownish-gray (10YR 6/2) loamy sand; weak, medium, granular structure; very friable; many small roots; strongly acid; clear, wavy boundary.

B1t—12 to 16 inches, pale-brown (10YR 6/3) sandy loam; common, medium, faint, light yellowish-brown (10YR 6/4) mottles; weak, fine, subangular blocky structure; very friable; many small roots; clay coating and bridging on sand grains; very strongly acid; clear, wavy boundary.

B21t—16 to 28 inches, light yellowish-brown (10YR 6/4) sandy loam; common, medium, faint, light brownish-gray (10YR 6/2), and yellowish-brown (10YR 5/4) mottles; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; many small roots; common pores; thin, discontinuous clay films on faces of peds; very strongly acid; gradual, wavy boundary.

B22t—28 to 42 inches, pale-brown (10YR 6/3) sandy loam; common, medium, faint, light-gray (10YR 7/1) and yellowish-brown (10YR 5/4) mottles; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; common small roots; thin discontinuous clay films on faces of a few peds; very strongly acid; gradual, wavy boundary.

B3g—42 to 48 inches, grayish-brown (10YR 5/2) loamy sand; common, coarse, faint-brown (10YR 5/3) mottles, and common, medium, faint, light-gray (10YR 7/1) mottles; weak, fine, subangular blocky structure; very friable, slightly sticky and nonplastic; thin clay coatings on sand grains; extremely acid; gradual, irregular boundary.

Cg—48 to 75 inches, light-gray (10YR 7/1) uncoated sand and pockets of grayish-brown (10YR 5/2), faintly coated sand; single grain; loose; extremely acid.

Dragston soils have a solum that ranges from 35 to 60 inches in thickness. The A horizon is 12 to 20 inches thick. The Ap and A1 horizons are dark gray to grayish brown. The A2 horizon is light brownish gray to very pale brown. The Bt horizon is 23 to 40 inches thick. It is pale brown to yellowish brown and is mottled with light brownish gray, gray, brownish yellow, and strong brown. The lower part of the B horizon is grayer than the upper part. The C horizon is commonly light gray and ranges from uncoated sand to sandy loam.

Dragston loamy sand (Dr).—This is a somewhat poorly drained soil on broad, smooth flats of interstream divides. Slopes are 0 to 2 percent. The mapped areas are wide and range from about 20 to 50 acres in size. The surface layer is dark-gray to grayish-brown loamy sand 12 to 20 inches thick. The subsoil is pale-brown to yellowish-brown, friable sandy loam 23 to 40 inches thick and is mottled with gray, light brownish gray, brownish yellow, and strong brown. The lower part of the subsoil is grayer than the upper part.

Included with this soil in mapping were a few areas of Dragston soils that have a sandy loam surface layer and a few areas of soils that have a thicker surface layer

but otherwise are similar to Dragston soils. Also included were some areas of Weston, Lynchburg, Rains, Johns, and Lumbee soils.

Infiltration is moderate, and surface runoff is slow. This soil is easy to keep in good tilth and can be worked throughout a wide range of moisture content.

Where artificially drained, this soil is well suited to most locally grown crops. Corn and soybeans are the main crops, but small grain, truck crops, and pasture crops are also important. The dominant trees in wooded areas are loblolly pine. This soil has a moderate wetness limitation because of a seasonal high water table. Drainage is needed for most crops. About half of the acreage is cultivated. The rest is in pasture and forest. Capability unit IIw–2; woodland group 2w8.

Exum Series

The Exum series consists of moderately well drained, nearly level soils on smooth, broad divides. These soils formed in Coastal Plain sediments. The seasonal high water table is at a depth of about 2½ feet.

In a representative profile, the surface layer is grayish-brown and pale-brown very fine sandy loam about 10 inches thick. The subsoil is about 55 inches thick and is yellowish-brown, friable clay loam in the upper part. The lower part is light yellowish-brown, friable loam mottled with light brownish gray and red. Below the subsoil, to a depth of about 70 inches, is pale-brown, friable loam mottled with light gray, brownish yellow, and red.

Exum soils are low in natural fertility and organic-matter content. They have moderate permeability, high available water capacity, and low shrink-swell potential. Crops grown on these soils respond well to lime and fertilizer.

Exum soils are important for farming, and most of the acreage is cultivated. A seasonal high water table is the major hazard limiting the use of these soils.

Representative profile of Exum very fine sandy loam, 0.3 mile west of Fremont, 50 feet south of Road 1359, in a cultivated field:

Ap—0 to 9 inches, grayish-brown (10YR 5/2) very fine sandy loam; weak, medium, granular structure; very friable; many small roots; medium acid; abrupt, smooth boundary.

A2—9 to 10 inches, pale-brown (10YR 6/3) very fine sandy loam; weak, medium, granular structure; very friable; many small roots; common small pores filled with grayish-brown surface soil; medium acid; clear, wavy boundary.

B21t—10 to 24 inches, yellowish-brown (10YR 5/6) clay loam; moderate, fine, subangular blocky structure; friable, sticky and plastic; common small roots; few small pores filled with grayish-brown surface soil; thin, discontinuous clay films on faces of peds; strongly acid; gradual, wavy boundary.

B22t—24 to 40 inches, light yellowish-brown (10YR 6/4) loam; common, medium, distinct, light brownish-gray (10YR 6/2) and red (2.5YR 5/8) mottles; moderate, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; thin clay films on faces of peds and in pores; very strongly acid; gradual, wavy boundary.

B3t—40 to 65 inches, light yellowish-brown (10YR 6/4) loam; many, coarse, distinct, light brownish-gray (10YR 6/2) mottles, and few, medium, prominent, red (2.5YR 5/8) mottles; moderate, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; thin clay films on faces of peds and in pores; very strongly acid; gradual, irregular boundary.

C—65 to 70 inches, pale-brown (10YR 6/3) loam; many, coarse, distinct, light-gray (10YR 7/1) and brownish-yellow (10YR 6/6) mottles, and few, fine, prominent, red mottles; massive; friable, slightly sticky and slightly plastic; very strongly acid.

Exum soils have a solum that is more than 60 inches thick. The A horizon is 8 to 15 inches thick. The Ap and A1 horizons are grayish brown to dark grayish brown, and the A2 horizon is pale brown to light yellowish brown. The B horizon is more than 50 inches thick and is loam to clay loam. The sand is dominantly very fine sand. The B horizon is pale brown to yellowish brown mottled with light brownish gray, brownish yellow, and red. The grayish mottles are within 30 inches of the surface. The C horizon is mottled pale brown, light gray, and brownish yellow, and is very fine sandy loam to clay loam.

Exum very fine sandy loam (Ex).—This is a moderately well drained soil on broad, smooth divides. Slopes are 0 to 2 percent. The mapped areas are near shallow drainageways. These areas are nearly as wide as they are long and range from 10 to 24 acres in size. The surface layer is grayish-brown to dark grayish-brown very fine sandy loam 8 to 15 inches thick. The subsoil is pale-brown to yellowish-brown, friable loam to clay loam more than 50 inches thick. It is mottled with light brownish gray, brownish yellow, and red in the lower part.

Included with this soil in mapping were a few areas of Exum soils that have a loam, silt loam, and fine sandy loam surface layer. In a few small areas are soils that have brittle consistence in the lower part of the subsoil but otherwise are similar to Exum soils. Some areas of Aycock, Nahunta, Norfolk, and Goldsboro soils were also included.

Infiltration is moderate, and surface runoff is slow. The soil is easy to keep in good tilth and can be worked throughout a wide range of moisture content.

This soil is well suited to all locally grown crops. It is used mainly for corn, soybeans, tobacco, small grain, and truck crops. Wetness is a moderate limitation because of the seasonal high water table. In places artificial drainage is needed for tobacco and other crops that require good drainage. Most of the acreage is cultivated. The rest is in pasture and forests. Capability unit IIw–1; woodland group 2w8.

Goldsboro Series

The Goldsboro series consists of moderately well drained, nearly level soils on smooth, broad divides. These soils formed in Coastal Plain sediments. The seasonal high water table is at a depth of about 2½ feet.

In a representative profile, the surface layer is grayish-brown and pale-brown loamy sand about 12 inches thick. The subsoil extends to a depth of about 76 inches. The upper part is brownish-yellow and yellowish-brown, friable sandy loam and sandy clay loam. The middle part is pale-brown, friable sandy clay loam mottled with gray and yellowish brown. The lower part is gray, friable sandy clay loam and sandy loam mottled with red and brownish yellow.

Goldsboro soils are low in natural fertility and organic-matter content. They have moderate permeability, medium available water capacity, and low shrink-swell poten-

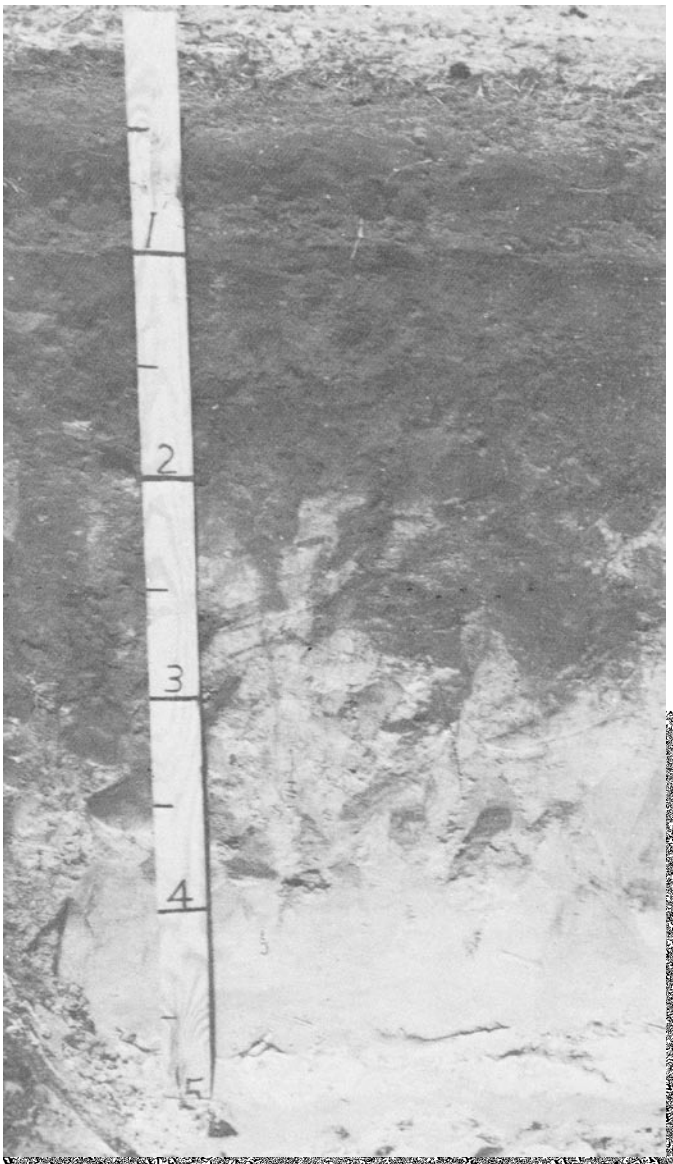
IICg—40 to 65 inches, light brownish-gray (10YR 6/2) sand; single grain; loose; nonsticky and nonplastic; about half of the grains have very thin coatings of clay; extremely acid.

Johns soils have a solum about 40 inches thick. The A horizon ranges from 10 to 20 inches in thickness and is dark gray to grayish brown. The B horizon ranges from 20 to about 30 inches in thickness and is sandy clay loam to sandy loam. The upper part of the B horizon ranges from pale

Johnston Series

The Johnston series consists of very poorly drained, nearly level soils on wide, flat, low flood plains along large drainageways. These soils formed in recent alluvium. The seasonal high water table is at the surface.

In a representative profile, the surface layer is loam about 28 inches thick that is very dark gray in the



Kalmia Series

The Kalmia series consists of well-drained, nearly level to moderately steep soils on broad, smooth terraces and short slopes on upland divides. These soils formed in stream and Coastal Plain sediments. The seasonal high water table remains below a depth of 2½ feet.

In a representative profile, the surface layer is grayish-brown and pale-brown loamy sand about 12 inches thick. The subsoil is about 28 inches thick. The upper part is dominantly yellowish-brown, friable sandy clay loam, and the lower part is brownish-yellow, friable sandy loam. Below the subsoil, to a depth of about 72 inches, is pale-yellow, loose sand.

Kalmia soils are low in natural fertility and organic-matter content. They have moderate permeability, me-lium available water capacity, and low shrink-swell po-ential. About half the acreage is subject to infrequent oods for short periods. Crops grown on these soils spond well to lime and fertilizer.

Kalmia soils are important for farming. Most of the acreage is cultivated and the rest pastured. Slope and, in places, infrequent floods are the major hazards limiting the use of these soils.

Representative profile of Kalmia loamy sand, 0 to 2 percent slopes, 1½ miles west of Goldsboro, 1½ miles north of intersection of U.S. Highway No. 70 and Road

tive for the series. The mapped areas are on broad, low ridges and range from 10 to 30 acres in size. The surface layer is grayish-brown to gray loamy sand 8 to 18 inches thick. The subsoil is light yellowish-brown to strong-brown, friable sandy clay loam to sandy loam 12 to 30 inches thick.

Included with this soil in mapping were a few areas of Kalmia soils that have a sandy loam and very fine sandy loam surface layer. Also included were areas of Wickham, Johns, and Kenansville soils.

Infiltration is moderate, and surface runoff is slow. This soil is easy to keep in good tilth and can be worked throughout a wide range of moisture content.

This soil is well suited to all locally grown crops, mainly corn, tobacco, soybeans, small grain, and truck crops. About half the acreage is subject to infrequent floods for short periods. With this exception, there are no major hazards or limitations for intensive use of this soil. Nearly all of the acreage is cultivated, and the rest is used for pasture. Capability Unit I–1; woodland group 2o7.

Kalmia loamy sand, 2 to 6 percent slopes (KaB).—This is a well-drained soil on broad, smooth stream terraces. The mapped areas are on slightly rounded sides of low ridges and range from 5 to 20 acreas in size. They are much longer than wide. The surface layer is grayish-brown to gray loamy sand 8 to 10 inches thick. The subsoil is light yellowish-brown to strong-brown, friable sandy clay loam to sandy loam 12 to 30 inches thick.

Included with this soil in mapping were a few areas of Kalmia soils that have a sandy loam and very fine sandy loam surface layer. In some areas are Kalmia soils that have an eroded, yellowish-brown sandy clay loam surface layer. A few areas of Wickham and Kenansville soils were also included.

Infiltration is moderate, and surface runoff is medium. This soil is easy to keep in good tilth and can be worked throughout a wide range of moisture content.

This soil is well suited to all locally grown crops. Corn, soybeans, tobacco, and small grain are the main crops. About half the acreage is subject to infrequent floods for very short periods. Because of slope, the erosion hazard is moderate and conservation practices are needed to effectively control runoff and erosion where this soil is cultivated. Most of the acreage is cultivated or pastured. The areas in forest are mainly on the short slopes of this mapping unit. Capabiilty unit IIe–1; woodland group 2o7.

Kalmia loamy sand, 10 to 15 percent slopes (KaD).—This is a well-drained soil on short sides of divides. The mapped areas are long and narrow and range from 5 to about 20 acres in size. The surface layer is grayish-brown to gray loamy sand 8 to 10 inches thick. The subsoil is light yellowish-brown to strong-brown, friable sandy clay loam to sandy loam 12 to 34 inches thick.

Included with this soil in mapping were a few areas of Kalmia soils that have a sandy loam and very fine sandy loam surface layer. In some areas are Kalmia soils that have an eroded, yellowish-brown, sandy clay loam surface layer. Areas of Ruston, Craven, and Wagram soils were also included.

Infiltration is moderate, and surface runoff is rapid. The soil is easy to keep in good tilth, and can be worked throughout a wide range of moisture content.

This soil is fairly well suited to most locally grown crops. The long and narrow shape of mapped areas limits use for row crops. Because of slope, the erosion hazard is very severe, and intensive conservation practices are needed to effectively control runoff and erosion where this soil is cultivated. Nearly all the acreage is forested. The rest is cultivated or pastured. Capability unit IVe–1; woodland group 2o7.

Kalmia loamy sand, 15 to 25 percent slopes (KaE).—This is a well-drained soil on short sides of divides. The mapped areas are long and narrow and range from 10 to 30 acres in size. The surface layer is grayish-brown to gray loamy sand 8 to 15 inches thick. The subsoil is light yellowish-brown to strong-brown, friable sandy clay loam to sandy loam 12 to 30 inches thick.

Included with this soil in mapping were a few areas of Kalmia soils that have a sandy loam and very fine sandy loam surface layer. Also included were some small areas of Norfolk, Wagram, and Kenansville soils.

Infiltration is moderate, and surface runoff is rapid. The soil is easy to keep in good tilth and can be worked throughout a wide range of moisture content.

Because of slope, this soil has a high susceptibility to erosion. It is not suited to cultivation, but is suited to pasture or trees. Nearly all of the acreage is forested. The rest is cultivated or pastured. Capability unit VIe–1; woodland group 2o7.

Kenansville Series

The Kenansville series consists of well-drained, nearly level to gently sloping soils on smooth, broad flats and slightly convex divides on uplands and terraces. These soils formed in Coastal Plain and stream sediments. The seasonal high water table remains below a depth of 5 feet.

In a representative profile, the surface layer is loamy sand about 24 inches thick that is grayish brown in the upper part and pale brown in the lower part. The subsoil is about 16 inches thick and is dominantly yellowish-brown, friable sandy loam in the upper part and brownish yellow, very friable loamy sand in the lower part. Below the subsoil, to a depth of about 70 inches, is yellow sand over gray loamy sand.

Kenansville soils are very low in natural fertility and organic-matter content. They have moderately rapid permeability, low available water capacity, and low shrink-swell potential. Crops grown on these soils respond fairly well to lime and fertilizer.

Kenansville soils are important for farming. Most of the acreage is cultivated, and the rest is pastured or forested. Very low fertility, leaching, droughtiness, and soil blowing are the major hazards limiting the use of these soils.

Representative profile of Kenansville loamy sand, 8 miles east of Goldsboro, 0.1 mile north of intersection of U.S. Highway No. 70 and Road 1719, 100 feet north of Walnut Creek Church, and 100 feet east of Road 1719, in a cultivated field:

Ap—0 to 8 inches, grayish-brown (10YR 5/2) loamy sand; weak, medium, granular structure; very friable; many small roots; medium acid; abrupt, smooth boundary.

A2—8 to 24 inches, pale-brown (10YR 6/3) loamy sand; weak, medium, granular structure; very friable;

surface layer. Also included were areas of Johnston, Chewacla, and Bibb soils.

Infiltration is moderate, and surface runoff is slow. The water ponds in some places. This soil is easy to keep in good tilth and can be worked throughout a wide range of moisture content.

Where artificially drained, this soil is suited to a few locally grown crops. The main crops are corn, soybeans, and pasture. Wetness is a very severe limitation because of the seasonal high water table, very frequent floods, and surface ponding. Surface and subsurface drainage and protection from floods are needed for most crops. Most of the acreage is in mixed hardwoods and pines. Capability unit IVw–4; woodland group 1w9.

Lakeland Series

The Lakeland series consists of excessively drained, nearly level to gently sloping soils in broad, undulating areas and rounded divides on uplands and terraces. These soils formed in Coastal Plain and stream sediments. The seasonal high water table remains below a depth of 5 feet.

In a representative profile, the surface layer is dark-gray sand about 3 inches thick. This is underlain by layers of loose sand about 77 inches thick that are light yellowish brown, strong brown, and yellow. The underlying layer, to a depth of about 100 inches, is light-gray, loose sand.

The Lakeland soils are very low in natural fertility and organic-matter content. They have rapid permeability, very low available water capacity, and low shrink-swell potential. Crops grown on these soils respond rather poorly to lime and fertilizer.

Lakeland soils are not important for farming. Most of the acreage is wooded, mainly with longleaf pine and turkey oak. Very low fertility, leaching, droughtiness, and soil blowing are the major limitations for use of these soils.

Representative profile of Lakeland sand, 9 miles south of Goldsboro, 0.7 mile east of intersection of Roads 1915 and 1120, 100 feet north of Road 1120, in a wooded area;

A1—0 to 3 inches, dark-gray (10YR 4/1) sand; single grain; loose, nonsticky and nonplastic; few small roots; common small particles of organic matter; about one-half of sand grains have thin coating of organic matter; strongly acid; clear, wavy boundary.

C1—3 to 30 inches, light yellowish-brown (10YR 6/4) sand; single grain; loose, nonsticky and nonplastic; coated; very strongly acid; gradual, wavy boundary.

C2—30 to 54 inches, strong-brown (7.5YR 5/8) sand; single grain; loose, nonsticky and nonplastic; coated; very strongly acid; gradual, wavy boundary.

C3—54 to 66 inches, strong-brown (7.5YR 5/8) sand; single grain; loose, nonsticky and nonplastic; common clean sand grains; very strongly acid; gradual, wavy boundary.

C4—66 to 80 inches, yellow (10YR 7/6) sand; few, medium, faint-brown (10YR 5/3) mottles, and common, fine, distinct, very pale-brown mottles; single grain; loose, nonsticky and nonplastic; common clean sand grains; strongly acid; gradual, wavy boundary.

C5—80 to 100 inches, light-gray (10YR 7/2) sand; single grain; loose, nonsticky and nonplastic; uncoated; strongly acid.

Lakeland soils are sands more than 72 inches thick. The A horizon is 2 to 8 inches thick and is dark gray to pale brown. The C horizon ranges from light yellowish brown to strong brown in the upper part and from yellow to light gray in the lower part. Sand grains in the upper part of the C horizon have thin coatings of silt and clay.

Lakeland sand (la).—This is an excessively drained, sandy soil in broad, undulating areas and on rounded divides. Slopes are 0 to 6 percent. The mapped areas are wide and long and range from 20 to several hundred acres in size. The surface layer is dark-gray to pale-brown sand 2 to 8 inches thick. The underlying layers, to a depth of 72 inches or more, are sand that is light yellowish brown to strong brown in the upper part and yellow to light gray in the lower part.

Included with this soil in mapping were some areas of Kenansville, Wagram, and Troup soils. Also included were some small, narrow areas of Rimini and Leon soils.

Infiltration is rapid, and surface runoff is slow. This soil is fairly easy to keep in good tilth and can be worked throughout a wide range of moisture content.

This soil is fairly well suited to a few locally grown crops. Because this soil is very deep sand, it has very severe limitations of droughtiness, leaching, very low fertility, and susceptibility to soil blowing. Intensive conservation practices are needed to control soil blowing and to reduce leaching and droughtiness where this soil is cultivated. Most of the acreage is forested. The cleared acreage is mainly idle, and the rest is cultivated and pastured. Capability unit IVs–1; woodland group 4s2.

Leaf Series

The Leaf series consists of poorly drained, nearly level soils on broad, smooth flats on terraces and in shallow drainageways on uplands. These soils formed in stream and Coastal Plain sediments. The seasonal high water table is at the surface.

In a representative profile, the surface layer is dark-gray loam about 9 inches thick. The subsoil is about 61 inches thick. The upper part is gray, firm clay loam over gray and light-gray, very firm clay. The lower part is light-gray, firm clay loam. Below the subsoil, to a depth of about 110 inches, is light-gray, friable clay loam over gray sandy loam.

Leaf soils are medium in natural fertility and low in organic-matter content. They have slow permeability, high available water capacity, and high shrink-swell potential. Most of the acreage is subject to infrequent floods for short periods. Crops grown on these soils respond well to lime and fertilizer.

Leaf soils are not important for farming. Most of the acreage is forested or pastured. A seasonal high water table, surface ponding, and, in places, infrequent floods are the major hazards limiting the use of these soils.

Representative profile of Leaf loam, 2 miles west of Goldsboro, 0.3 mile south of North Carolina State Hospital dairy farm on State Route 581, and 50 feet west of farm road, in a pasture:

Ap—0 to 9 inches, dark-gray (10YR 4/1) loam, moderate, medium, granular structure; friable; many small roots; slightly acid; clear, smooth boundary.

B1g—9 to 14 inches, gray (10YR 5/1) clay loam; few, fine, distinct, brownish-yellow mottles; moderate, fine, subangular blocky structure; firm, sticky and plastic; many small roots; common small pores filled with dark gray surface soil; strongly acid; clear, wavy boundary.

B21tg—14 to 36 inches, gray (10YR 5/1) clay; few, fine, distinct, brownish-yellow mottles; moderate, medium, angular blocky structure; very firm, sticky and very plastic; few small roots between peds; thin clay films on faces of peds; extremely acid; clear, wavy boundary.

B22tg—36 to 46 inches, light-gray (10YR 7/1) clay; common, medium, distinct, brownish-yellow (10YR 6/6) mottles, few, coarse, faint, gray (10YR 5/1) mottles, and few, fine, distinct, yellowish-red mottles; weak, medium, angular blocky structure; very firm, sticky and very plastic; few small roots; thin clay films on faces of peds; extremely acid; clear, wavy boundary.

B3g—46 to 70 inches, light-gray (2.5Y 7/2) clay loam; common, coarse, distinct, brownish-yellow (10YR 6/6) mottles; weak, fine, subangular blocky structure; firm, sticky and plastic; thin clay films in pores; extremely acid; gradual, irregular boundary.

C1g—70 to 92 inches, light-gray (N 7/0) clay loam; common, medium, distinct, yellowish-brown (10YR 5/6) mottles, and few, fine, distinct, brown mottles; massive; friable, slightly sticky and plastic; extremely acid; clear, wavy boundary.

C2g—92 to 110 inches, gray (10YR 6/1) sandy loam; common, medium, distinct, brown (10YR 5/3) mottles; massive; friable, slightly sticky and slightly plastic; extremely acid.

Leaf soils have a solum more than 60 inches thick. The A horizon ranges from 7 to 10 inches in thickness and is dark gray to grayish brown. The B horizon is more than 50 inches thick and is clay loam to clay. The silt content is more than 30 percent. The B horizon is gray to light gray mottled with brownish yellow or yellowish red. The C horizon is light gray to gray and ranges from sandy loam to clay loam.

Leaf loam (le).—This is a poorly drained soil on smooth stream terraces and in shallow drainageways on the uplands. Slopes are 0 to 2 percent. The mapped areas range from narrow to wide and from 5 to 100 acres in size. The surface layer is dark-gray to grayish-brown loam 7 to 10 inches thick. The subsoil is gray to light-gray, firm to very firm clay loam to clay more than 50 inches thick. It is mottled with brownish yellow, strong brown, or yellowish red.

Included with this soil in mapping were a few areas of Leaf soils that have a silt loam or sandy loam surface layer. In some areas are soils that have a thinner subsoil, but otherwise are similar to Leaf soils. Some areas of Lumbee, Johns, Pantego, and Kinston soils were also included.

Infiltration is moderate, and surface runoff is slow. The water ponds in some places. Because the cl ' t t '

Leon Series

The Leon series consists of somewhat poorly drained, nearly level soils on broad, smooth interstream divides on uplands and terraces. These soils formed in Coastal Plain and stream sediments. The seasonal high water table is at a depth of about 1½ feet.

In a representative profile, the surface layer is gray and light brownish-gray sand about 16 inches thick. The subsoil is dark reddish-brown, friable, weakly cemented sand about 18 inches thick. Below the subsoil, to a depth of about 70 inches, is light brownish-gray, loose sand.

Leon soils are very low in natural fertility and organic-matter content. They have moderate permeability, low available water capacity, and low shrink-swell potential. Crops grown on these soils respond poorly to lime and fertilizer.

Leon soils are not important for farming. Most of the acreage is forested. A seasonal high water table, very low fertility, and leaching are the major hazards limiting the use of these soils.

Representative profile of Leon sand, 10 miles south of Goldsboro, one-fourth mile north of intersection of Roads 1950 and 1948, and 100 feet west of Road 1948, in an idle field:

Ap—0 to 8 inches, gray (10YR 5/1) sand; single grain; loose; many small roots; most sand grains have thin coatings of organic matter; few, fine, distinct, black particles of organic matter; extremely acid; clear, smooth boundary.

A2—8 to 16 inches, light brownish-gray (10YR 6/2) sand; single grain; loose; few small roots; very strongly acid; clear, wavy boundary.

B21h—16 to 23 inches, dark reddish-brown (5YR 3/2) sand; massive; weakly cemented; friable, nonsticky and nonplastic; thick humus coatings on most sand grains and bridging of sand grains; very strongly acid; clear, wavy boundary.

B22h—23 to 34 inches, dark reddish-brown (5YR 3/3) sand; massive; weakly cemented, friable, nonsticky and nonplastic; thick humus coatings on most sand grains; very strongly acid; gradual, wavy boundary.

C—34 to 70 inches, light brownish-gray (10YR 6/2) sand; single grain, loose; uncoated; very strongly acid.

Leon soils have a solum less than 45 inches thick. The A horizon ranges from 10 to 20 inches in thickness. The Ap and A1 horizons range from gray to very dark gray. The very dark gray part, where present, is less than 8 inches thick. The A2 horizon is light brownish gray to light gray. The Bh horizon is 8 to 25 inches thick and is weakly cemented sand to loamy sand. It is dark reddish brown to dark brown. The C horizon is light brownish-gray to white sand.

L sand (l) Th ' s so e hat oorly drained soil

In a representative profile, the surface layer is dark-gray and gray very fine sandy loam about 11 inches thick. The subsoil is about 53 inches thick and is dominantly friable clay loam that is gray mottled with brownish yellow and red. Below the subsoil, to a depth of about 70 inches, is light-gray, friable clay loam mottled with red and brownish yellow.

Myatt soils are medium to low in natural fertility and low in organic-matter content. They have moderately slow permeability, high available water capacity, and low shrink-swell potential. Crops grown on these soils respond well to lime and fertilizer.

Myatt soils are not important for farming. Most of the acreage is wooded, and the rest is cultivated and pastured. A seasonal high water table and surface ponding are the major hazards limiting the use of these soils.

Representative profile of Myatt very fine sandy loam, 0.6 mile west of Fremont and 300 feet south of Road 1342, in a cultivated field:

Ap—0 to 9 inches, dark-gray (10YR 4/1) very fine sandy loam; weak, medium, granular structure; very friable; many small roots; medium acid; abrupt, smooth boundary.

A2—9 to 11 inches, gray (10YR 6/1) very fine sandy loam; few, fine, faint, light yellowish-brown mottles; weak, medium, granular structure; very friable; many small roots; common small pores filled with dark-gray surface soil; very strongly acid; clear, wavy boundary.

B1g—11 to 16 inches, gray (10YR 6/1) loam; common, medium, distinct, brownish-yellow (10YR 6/6) mottles; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; common small roots; common small pores filled with dark-gray surface soil; very strongly acid; clear, wavy boundary.

B21tg—16 to 36 inches, gray (10YR 6/1) clay loam; common, medium, distinct, brownish-yellow (10YR 6/6) mottles; weak, fine, subangular blocky structure; friable, slightly sticky and plastic; common small roots; few small pores; thin discontinuous clay films on faces of peds; very strongly acid; clear, wavy boundary.

B22tg—36 to 54 inches, gray (10YR 6/1) clay loam; common, coarse, distinct, brownish-yellow (10YR 6/6) mottles, and few, medium, prominent, red (2.5YR 5/8) mottles; weak, fine, angular blocky structure; friable, sticky and plastic; thin discontinuous clay films on faces of peds; very strongly acid; clear, wavy boundary.

B3tg—54 to 64 inches, gray (10YR 6/1) clay loam; common, fine, distinct, brownish-yellow mottles, and common, fine, prominent, red mottles; weak, fine, angular blocky structure; friable, sticky and plastic; common small pores; thin discontinuous clay films on faces of peds; very strongly acid; gradual, irregular boundary.

Cg—64 to 70 inches, light-gray (10YR 7/1) clay loam; many, fine, prominent, red mottles, and few, medium, distinct, brownish-yellow (10YR 6/6) mottles; massive; friable, sticky and plastic; very strongly acid.

Myatt soils have a solum that ranges from 50 to 70 inches in thickness. The A horizon is 10 to 15 inches thick. The Ap and A1 horizons are dark gray to very dark gray. The very dark gray part, where present, is less than 6 inches thick. The A2 horizon is gray to light brownish gray. The B horizon is about 40 to 55 inches thick and is loam to clay loam. The sand fraction is dominantly very fine sand. The B horizon is gray to light gray mottled with brownish yellow, strong brown, and red. The C horizon is dominantly light gray to gray and ranges from very fine sandy loam to clay loam.

Myatt very fine sandy loam (My).—This is a poorly drained soil in shallow depressions and on broad, smooth flats on uplands and terraces. Slopes are 0 to 2 percent. The mapped areas range from small, oval depressions of about 5 acres in size to broad, long areas up to 40 acres in size. The surface layer is dark-gray to very dark gray very fine sandy loam 10 to 15 inches thick. The very dark gray part of the surface layer, where present, is less than 6 inches thick. The subsoil is gray to light-gray, friable loam to clay loam, 40 to 55 inches thick, and is commonly mottled with brownish yellow, strong brown, and red.

Included with this soil in mapping were a few areas of Myatt soils that have a fine sandy loam surface layer. In small areas are poorly drained soils that are brittle in the lower part of the subsoil. Also included were a few areas of very poorly drained soils that have a very dark-gray surface layer more than 6 inches thick and some areas of Nahunta and Liddell soils.

Infiltration is moderate, and surface runoff is slow. The water ponds in some places. This soil is easy to keep in good tilth and can be worked throughout a wide range of moisture content.

Where artificially drained, this soil is well suited to a few locally grown crops, mainly corn and soybeans. The principal trees in forested areas are loblolly pine. Wetness is a severe limitation because of the seasonal high water table and surface ponding. Surface and subsurface drainage is needed where this soil is cultivated or pastured. Most of the acreage is wooded. The rest is cultivated and pastured. Capability unit IIIw–3; woodland group 2w9.

Nahunta Series

The Nahunta series consists of somewhat poorly drained, nearly level soils on broad, smooth flats of interstream divides. These soils formed in Coastal Plain sediments. The seasonal high water table is at a depth of about 1½ feet.

In a representative profile, the surface layer is dark-gray and pale-brown very fine sandy loam about 10 inches thick. The subsoil is about 62 inches thick. The upper part is light yellowish-brown, friable loam mottled with gray and brownish yellow. The lower part is gray, friable clay loam mottled with brownish yellow, yellowish red, and red.

Nahunta soils are low in natural fertility and organic-matter content. They have moderate permeability, high available water capacity, and low shrink-swell potential. Crops grown on these soils respond well to lime and fertilizer.

Nahunta soils are important for farming. Most of the acreage is cultivated and the rest pastured and wooded. A seasonal high water table is the major hazard limiting the use of these soils.

Representative profile of Nahunta very fine sandy loam, 0.8 mile west of Fremont and 200 feet south of Road 1342, in a cultivated field:

Ap—0 to 8 inches, dark-gray (10YR 4/1) very fine sandy loam; weak, medium, granular structure; very friable; many small roots; medium acid; abrupt, smooth boundary.

A2—8 to 10 inches, pale-brown (10YR 6/3) very fine sandy loam; weak, medium, granular structure; very fri-

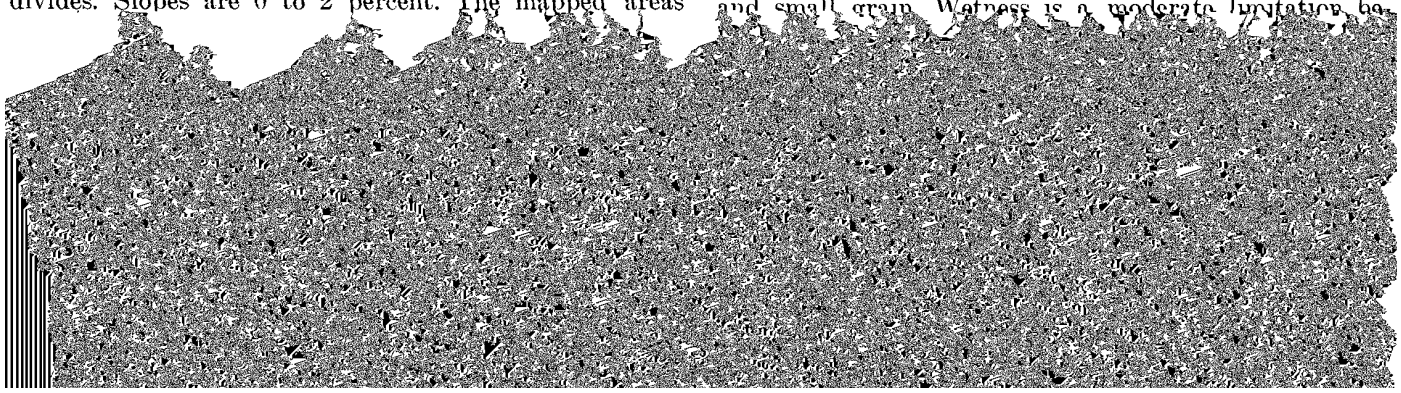
Figure 5.—**Water stands on somewhat poorly drained Nahunta very fine sandy loam following a heavy rain.**

These soils have siliceous mineralogy that is outside the defined range for the series, but this difference does not alter their usefulness or behavior.

Nixonton very fine sandy loam (Nf).—This is a moderately well drained soil on broad, smooth, interstream divides. Slopes are 0 to 2 percent. The mapped areas

Infiltration is moderate, and surface runoff is slow. This soil is easy to keep in good tilth and can be worked throughout a wide range of moisture content.

This soil is well suited to all locally grown crops. It is used chiefly for corn, soybeans, tobacco, truck crops, and small grain. Wetness is a moderate limitation be-



The subsoil is about 64 inches thick and is dominantly yellowish-brown and brownish-yellow, friable sandy clay loam.

Norfolk soils are low in natural fertility and organic-matter content. They have moderate permeability, medium available water capacity, and low shrink-swell potential. Crops grown on these soils respond well to applications of lime and fertilizer.

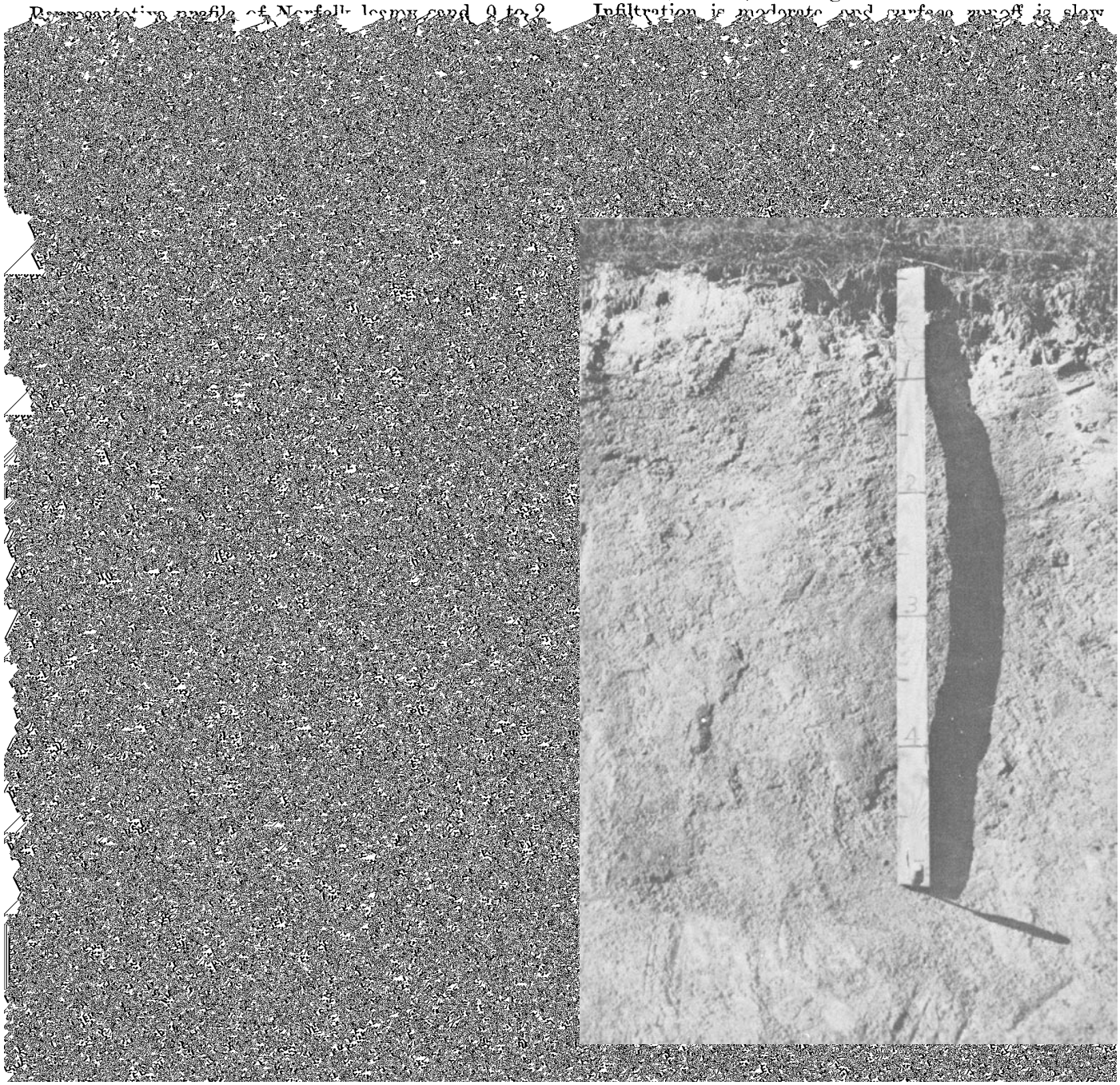
Norfolk soils are the most important soils for farming in Wayne County. Most of the acreage is cultivated, and the rest is pastured and forested. Slope is the major limitation for use of these soils.

Representative profile of Norfolk loamy sand, 0 to 2 [illegible]

has the profile described as representative of the series. The mapped areas are irregular in shape and range from 5 to about 200 acres in size. The surface layer is grayish-brown loamy sand 10 to 20 inches thick. The subsoil is friable sandy clay loam to sandy loam more than 56 inches thick (fig. 6). It is commonly yellowish brown and brownish yellow but ranges from light yellowish brown to strong brown.

Included with this soil in mapping were a few areas of Norfolk soils that have a sandy loam or very fine sandy loam surface layer. Also included were some areas of Goldsboro, Ruston, and Wagram soils.

Infiltration is moderate and surface runoff is slow



the acreage is cultivated. Capability unit I-1; woodland group 2o1.

Norfolk loamy sand, 2 to 6 percent slopes (NoB).—This is a well-drained soil on smooth sides of divides. The mapped areas are elongated and range from 5 to 30 acres in size. The surface layer is grayish-brown loamy sand 10 to 20 inches thick. The subsoil is friable sandy clay loam to sandy loam more than 56 inches thick. It is commonly yellowish brown and brownish yellow, but ranges from light yellowish brown to strong brown.

Included with this soil in mapping were a few areas of Norfolk soils that have a loam or very fine sandy loam surface layer. Also included were small areas of Bibb soils in short, narrow drainageways and areas of Ruston, Goldsboro, and Wagram soils.

Infiltration is moderate, and surface runoff is medium. This soil is easy to keep in good tilth and can be worked throughout a wide range of moisture content.

This soil is well suited to all locally grown crops. It is used mainly for corn, tobacco, soybeans, truck crops, and small grain. Tobacco is especially well suited (fig. 7). Because of slope, the erosion hazard is moderate and conservation practices, such as contour row arrangement, are needed to effectively control runoff and erosion where this soil is cultivated. Nearly all of the acreage is cultivated and pastured. The rest is forested. The forested areas are on the shortest slopes of this mapping unit. Capability unit IIe–1; woodland group 2o1.

Norfolk loamy sand, 6 to 10 percent slopes (NoC).—This is a well-drained soil on short sides of divides. The mapped areas are long and narrow and range from 5 to 20 acres in size. The surface layer is grayish-brown loamy sand 8 to 20 inches thick. The subsoil is friable sandy clay loam to sandy loam more than 56 inches thick. It is commonly yellowish brown and brownish yellow but ranges from light yellowish brown to strong brown.

Included with this soil in mapping were a few areas of Norfolk soils that have a sandy loam or very fine sandy loam surface layer. Also included were a few areas of Ruston, Wagram, Craven, and Kalmia soils.

Infiltration is moderate, and surface runoff is medium. This soil is easy to keep in good tilth and can be worked over a wide range of moisture content.

This soil is well suited to most locally grown crops, but the size and shape of the mapped areas limit use for row crops. Because of slope, the erosion hazard is severe, and intensive conservation practices are necessary to effectively control runoff and erosion in cultivated areas. Most of the acreage is forested. The rest is pastured or cultivated. Capability unit IIIe–1; woodland group 2o1.

Norfolk sandy loam, 2 to 6 percent slopes, eroded (NrB2).—This is a well-drained soil on smooth sides of divides. The mapped areas are narrow and long, and range from 3 to about 10 acres in size. In most places, the surface layer is a mixture of material from the original surface layer and from the subsoil and is dominantly sandy loam 4 to 8 inches thick. It is grayish brown in the less eroded areas to yellowish brown in the more eroded areas. The subsoil is friable sandy clay loam to sandy loam more than 56 inches thick. It is commonly yellowish brown and brownish yellow but ranges from light yellowish brown to strong brown.

Included with this soil in mapping were a few areas of Norfolk soils that have a loamy sand surface layer and some eroded areas where the subsoil is exposed. Also included were a few small areas of Bibb soils in short, narrow drainageways and areas of Ruston and Craven soils.

Infiltration is moderately slow, and surface runoff is medium. Because the surface layer is thin, this soil is difficult to keep in good tilth, but it can be worked throughout a fairly wide range of moisture content. The severely eroded spots crust as they dry after a hard rain or become cloddy if worked when wet. This affects germination and causes poor or uneven crop growth.

This soil is well suited to all locally grown crops and is used mainly for corn, soybeans, small grain, and pasture grasses. Because of slope, the erosion hazard is moderate, and conservation practices are needed to effectively control runoff and erosion in cultivated areas. Practically all of the acreage is cultivated and pastured. Capability unit IIe–1; woodland group 2o1.

Pamlico Series

The Pamlico series consists of very poorly drained, nearly level organic soils on wide, flat, low flood plains along large streams. These soils formed in alluvium and plant residues. The seasonal high water table is at the surface most of the year.

In a representative profile, Pamlico soils consist of muck about 40 inches thick that is very dark brown in the upper part, black in the middle part, and very dark grayish brown in the lower part. Below the muck, to a depth of about 60 inches, is very dark grayish-brown loamy sand.

Pamlico soils are low in natural fertility and high in organic-matter content. They have moderate permeability, high available water capacity, and high shrink-swell potential. Pamlico soils are very frequently flooded for long periods. Crops grown on these soils respond fairly well to lime and fertilizer.

Pamlico soils are not important for farming. Nearly all of the acreage is forested.

A seasonal high water table and very frequent floods limit the use of these soils. Where these soils are artificially drained and excessively dry, subsidence and burning of organic material are major hazards.

Representative profile of Pamlico muck, 8 miles east of Mt. Olive, 100 feet northeast of the bridge of Road 1948 crossing the Northeast Cape Fear River, in a wooded flood plain:

O1—0 to 3 inches, very dark-brown (10YR 2/2) partially decomposed moss, leaves, twigs, and roots; 75 percent fiber content after rubbing; weak, fine, platy structure; friable, slightly sticky and slightly plastic; many small roots; extremely acid; gradual, wavy boundary.

Oa1—3 to 14 inches, black (10YR 2/1) decomposed organic matter (muck); sodium pyrophosphate extract is yellowish brown; 10 percent fiber; weak, coarse, granular structure; friable, slightly sticky and slightly plastic; common small roots; extremely acid; gradual, wavy boundary.

Oa2—14 to 40 inches, very dark grayish-brown (10YR 3/2) decomposed organic matter (muck); sodium pyrophosphate extract is light yellowish brown; 20 percent fiber; less than 10 percent after rubbing; massive; friable, slightly sticky and slightly plastic; few small roots in upper part; extremely acid; clear, wavy boundary.

IIAb—40 to 60 inches, very dark grayish-brown (10YR 3/2) loamy sand; massive; very friable, slightly sticky and slightly plastic; extremely acid.

The muck layer ranges from 12 to 50 inches in thickness and is black to very dark grayish brown. Fiber content is less than 33 percent unrubbed and less than 10 percent after rubbing. The underlying material is sandy in texture and very dark grayish brown to grayish brown.

Pamlico muck (Pa).—This is a very poorly drained, nearly level organic soil on flood plains. Slopes are 0 to 2 percent. The mapped areas are wide and are 10 to several hundred acres in size. The upper layers are black to very dark grayish-brown muck, 12 to 50 inches thick. The underlying layer is very dark grayish-brown to grayish-brown, very friable loamy sand.

Included with this soil in mapping were areas that have an overwash layer of mineral loam. Also included were some areas of Johnston soils, and a few areas of very poorly drained sand having a black surface layer.

Infiltration is moderate, and surface runoff is very slow. This soil is easy to keep in good tilth and can be worked throughout a wide range of moisture content.

This soil is generally unsuited for cultivation but is suited for pasture or trees. Poor drainage and frequent floods are very severe limitations. Fire is a hazard where this soil is excessively drained. Subsurface drains function poorly because this soil is at low elevation. Nearly all of the acreage is forested. Capability unit Vw–1; woodland group 4w3.

Pantego Series

The Pantego series consists of very poorly drained, nearly level soils on broad, smooth flats, in oval depressions, and in shallow drainageways on the uplands and terraces. These soils formed in Coastal Plain and stream sediments. The seasonal high water table is at the surface.

In a representative profile, the surface layer is black and very dark gray loam about 12 inches thick. The subsoil is about 53 inches thick. The upper part is gray and light brownish-gray, friable sandy clay loam mottled with brownish yellow, yellowish red, and strong brown. The lower part is light-gray, friable sandy loam.

Pantego soils are low in natural fertility and medium in organic-matter content. They have moderate permeability, medium available water capacity, and low shrink-swell potential. Crops grown on these soils respond well to lime and fertilizer.

Pantego soils are not important for farming. Most of the acreage is in forest, and the rest is pastured and

Rains sandy loam (Ra).—This is a poorly drained soil in oval depressions and on smooth flats in broad areas between streams. Slopes are 0 to 2 percent. The mapped areas are generally as wide as they are long and range from 5 to several hundred acres in size. The surface layer is dark-gray or gray to very dark gray sandy loam 10 to 15 inches thick. The very dark gray part of the surface layer, where present, is less than 8 inches thick. The subsoil is gray to light-gray, friable sandy clay loam to sandy loam more than 50 inches thick. It is mottled with dark grayish brown, brownish yellow, yellowish brown, and yellowish red (fig. 8).

Included with this soil in mapping were a few areas of Rains soils that have a loam and very fine sandy loam surface layer. Also included were some areas of Lynchburg, Pantego, and Torhunta soils.

Infiltration is moderate, and surface runoff is slow. The water ponds in some places. This soil is easy to keep in good tilth and can be worked throughout a wide range of moisture content.

Where artificially drained, this soil is well suited to

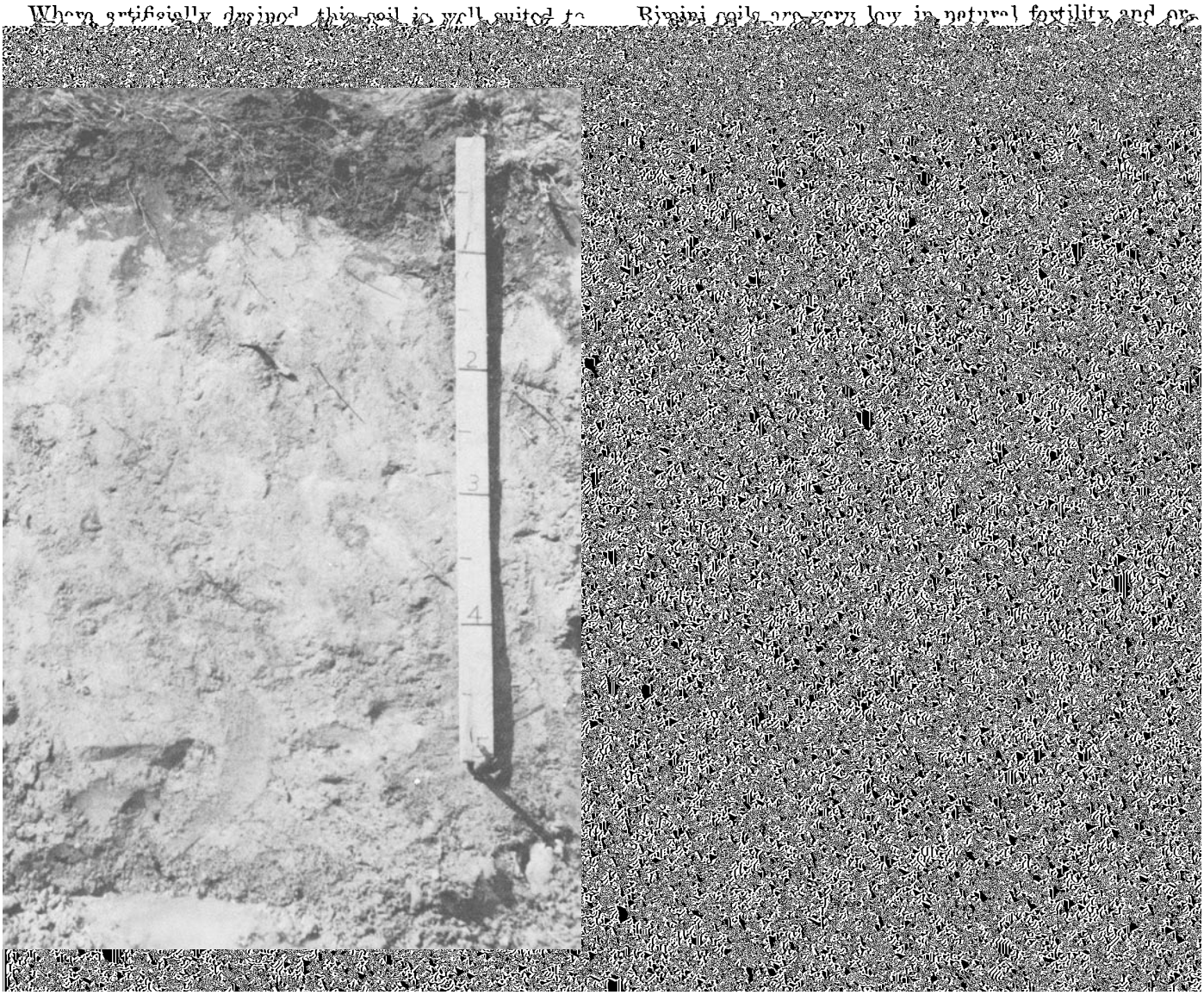
The principal trees in forested areas are loblolly pine. Wetness is a severe limitation because of surface ponding and the seasonal high water table. Surface and subsurface drainage is needed where this soil is cultivated or pastured. Most of the acreage is in forest, and the rest is cultivated and pastured. Capability unit IIIw–3; woodland group 2w3.

Rimini Series

The Rimini series consists of excessively drained, nearly level soils in broad areas between the "Carolina Bays." These soils formed in Coastal Plain sediments. The seasonal high water table is at a depth of about 2½ feet.

In a representative profile, the surface layer is gray sand about 9 inches thick. The subsurface layer is light-gray sand about 45 inches thick. Below this, to a depth of about 75 inches, is very dark-brown, friable, weakly cemented sand.

Rimini soils are very low in natural fertility and or-



Representative profile of Troup sand, 6 miles west of Dudley, 0.7 mile north of intersection of Roads 1125 and 1122, 0.2 mile west of Road 1125, and 50 feet south of farm road, in a cultivated field:

Ap—0 to 8 inches, grayish-brown (10YR 5/2) sand; single grain; loose; many small roots; strongly acid; abrupt, smooth boundary.

A2—8 to 49 inches, very pale brown (10YR 7/3) sand; single grain; loose; few small roots in upper part; few uncoated sand grains; very strongly acid; abrupt, smooth boundary.

B1—49 to 52 inches, yellowish-brown (10YR 5/8) sandy loam; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; very strongly acid; clear, wavy boundary.

B21t—52 to 72 inches, brownish-yellow (10YR 6/8) sandy clay loam; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; thin discontinuous clay films on faces of peds and in pores; very strongly acid; gradual, wavy boundary.

B22t—72 to 85 inches, strong-brown (7.5YR 5/8) sandy clay loam; common, fine, faint, brownish-yellow mottles; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; thin discontinuous clay films on faces of peds and in pores; few pebbles; very strongly acid; clear, wavy boundary.

B3t—85 to 110 inches, strong-brown (7.5YR 5/8) sandy loam; common, medium, distinct, pale-brown (10YR 6/3) and light-gray (10YR 7/1) mottles; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; thin discontinuous clay films on faces of peds and in pores; very strongly acid.

Troup soils have a solum more than 80 inches thick. The A horizon ranges from 40 to 72 inches in thickness. The Ap and A1 horizons are grayish brown to light gray. The A2 horizon is very pale brown to pale brown. The B horizon is more than 40 inches thick, and is sandy loam to sandy clay loam. It is commonly brownish yellow and strong brown to yellowish red mottled with pale brown, light gray, and red.

Troup sand (Tr).—This is a well-drained soil on smooth, broad, and slightly rounded divides. Slopes are 0 to 6 percent. The mapped areas are about as broad as long and range from about 10 to more than 100 acres in size. The surface layer is grayish-brown to light-gray sand 40 to 72 inches thick. The subsoil is brownish-yellow and strong-brown to yellowish-red, friable sandy loam to sandy clay loam more than 40 inches thick (fig. 9).

Included with this soil in mapping were some areas of Wagram, Kenansville, Leon, and Lakeland soils.

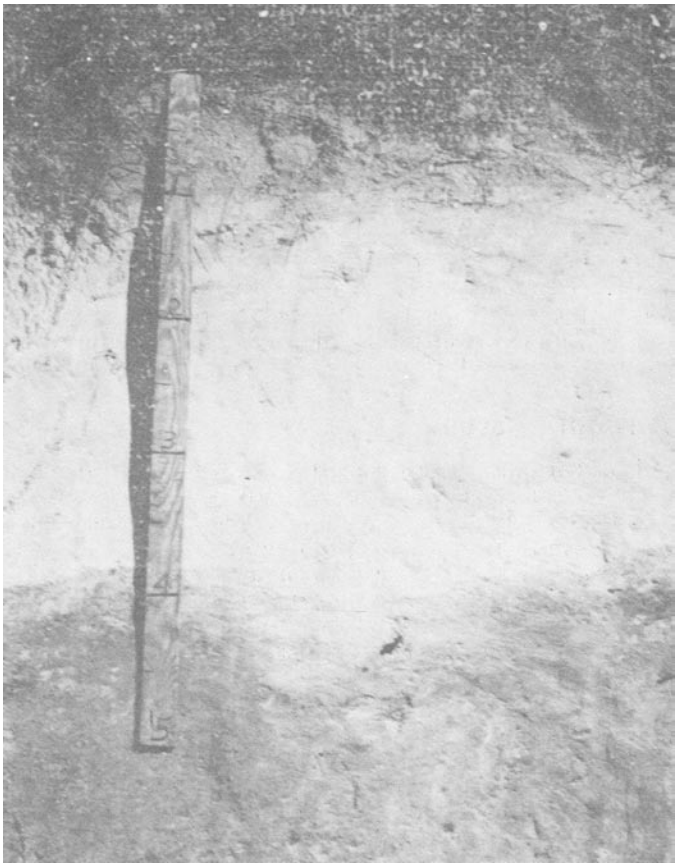
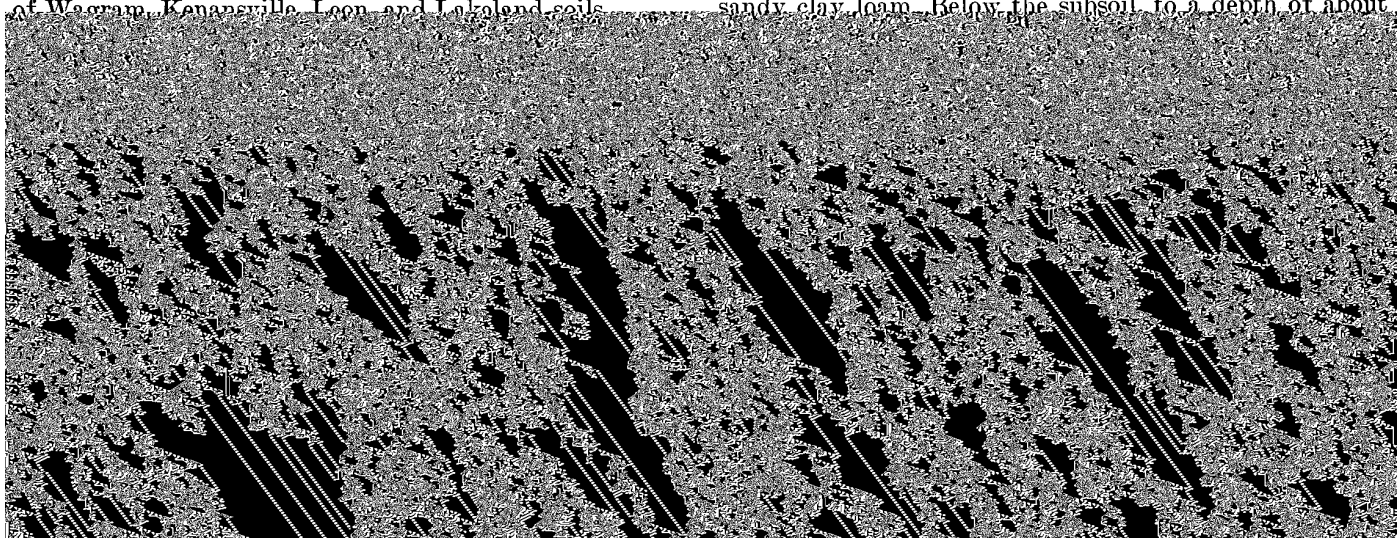


Figure 9.—Profile of Troup sand.

Coastal Plain sediments. The seasonal high water table remains below a depth of 5 feet.

In a representative profile, the surface layer is grayish-brown loamy sand about 8 inches thick over pale-brown loamy sand about 20 inches thick. The subsoil is about 40 inches thick and is dominantly yellowish-brown, friable sandy clay loam. Below the subsoil, to a depth of about



A2—8 to 28 inches, pale-brown (10YR 6/3) loamy sand; weak, medium, granular structure; very friable; few small roots; very strongly acid; clear, wavy boundary.

B1—28 to 31 inches, light yellowish-brown (10YR 6/4) sandy loam; common, medium, faint, pale-brown (10YR 6/3) mottles; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; few small roots; very strongly acid; gradual, wavy boundary.

B21t—31 to 45 inches, yellowish-brown (10YR 5/8) sandy clay loam; few, medium, faint, strong-brown (7.5YR 5/8) mottles; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; thin discontinuous clay films on faces of peds; very strongly acid; gradual, wavy boundary.

B22t—45 to 54 inches, yellowish-brown (10YR 5/4) sandy clay loam; common, medium, distinct pale-brown (10YR 6/3), and strong-brown (7.5YR 5/8) mottles, and few, fine, prominent, red (2.5YR 5/8) mottles; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; thin discontinuous clay films on faces of peds; very strongly acid; clear, wavy boundary.

B3t—54 to 68 inches, yellowish-brown (10YR 5/4) sandy clay loam; common, medium, distinct, light-gray (10YR 7/1) mottles, and common, medium, prominent, red (2.5YR 5/8) mottles; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; thin discontinuous clay films on faces of peds; very strongly acid; clear, irregular boundary.

C—68 to 86 inches, brownish-yellow (10YR 6/6) sandy clay loam with pockets of loamy sand; common, medium, distinct, light-gray (10YR 7/1) mottles, and common, coarse, prominent, red (2.5YR 5/8) mottles; massive; friable, slightly sticky and slightly plastic; very strongly acid.

Wagram soils have a solum more than 60 inches thick. The A horizon ranges from 20 to 40 inches in thickness. The Ap and A1 horizons range from grayish brown to gray. The A2 horizon is dominantly pale brown but ranges from light brownish gray to light yellowish brown. The B horizon ranges from about 40 to more than 60 inches in thickness and is sandy clay loam to sandy loam. It is yellowish brown and brownish yellow to strong brown mottled with light gray, pale brown, and strong brown in the lower part. The C horizon is brownish yellow to light gray and ranges from loamy sand to sandy clay loam.

Wagram loamy sand, 0 to 6 percent slopes (WaB).—This is well-drained soil on slightly convex, smooth and broad divides. It has the profile described as representative for the series. The mapped areas are irregular in shape and range from 10 to about 50 acres in size. The surface layer is grayish-brown to gray loamy sand 20 to 40 inches thick. The subsoil is yellowish-brown and brownish-yellow to strong-brown, friable sandy clay loam to sandy loam about 40 to more than 60 inches thick.

Included with this soil in mapping were a few areas of Wagram soils that have a sandy surface layer. Also included were small areas of Bibb soils in short, narrow drainageways and some areas of Norfolk, Goldsboro, Ruston, and Troup soils.

Infiltration is rapid, and surface runoff is slow. The soil is fairly easy to keep in good tilth and can be worked throughout a wide range of moisture content.

This soil is suited to most locally grown crops, mainly tobacco, corn, soybeans, and small grain. Because the surface layer is sandy, low fertility, leaching, droughtiness, and soil blowing are moderate limitations. Conservation practices are needed to effectively control soil blowing and to reduce leaching and droughtiness where this soil is cultivated. Most of the acreage is cultivated, and the rest is pastured and forested. Capability unit IIs–1; woodland group 3s2.

Wagram loamy sand, 6 to 10 percent slopes (WaC).—This is a well-drained soil on short sides of divides. The mapped areas are long and narrow in shape and range from 5 to 20 acres in size. The surface layer is grayish-brown to gray loamy sand 20 to 40 inches thick. The subsoil is yellowish-brown and brownish-yellow to strong-brown, friable sandy clay loam to sandy loam about 40 to more than 60 inches thick.

Included with this soil in mapping were a few areas of Wagram soils that have a sandy surface layer. Also included were some areas of Norfolk, Ruston, and Craven soils.

Infiltration is rapid, and surface runoff is medium. This soil is fairly easy to keep in good tilth and can be worked throughout a wide range of moisture content.

This soil is fairly well suited to most locally grown crops but the size and shape of mapped areas limit its use for row crops. Because of slope, erosion is a severe hazard, and intensive conservation practices are needed to control runoff and erosion where this soil is cultivated. Other limitations for use of this soil are low to very low fertility, leaching, droughtiness, and soil blowing. Most of the acreage is forested, and only a small acreage is pastured and cultivated. Capability unit IIIe–3; woodland group 3s2.

Wagram loamy sand, 10 to 15 percent slopes (WaD).—This is a well-drained soil on short sides of divides. The mapped areas are long and narrow and range from about 5 to 20 acres in size. The surface layer is grayish-brown to gray loamy sand 20 to 40 inches thick. The subsoil is yellowish-brown and brownish-yellow to strong-brown, friable sandy clay loam to sandy loam about 40 to more than 60 inches thick.

Included with this soil in mapping were a few areas of Wagram soils that have a sandy surface layer. Also included were some areas of Kalmia, Craven, and Troup soils.

Infiltration is rapid, and surface runoff is medium. This soil is fairly easy to keep in good tilth and can be worked throughout a wide range of moisture content.

This soil is fairly well suited to most locally grown crops, but the size and shape of mapped areas limit its use for row crops. Erosion is a very severe hazard because of slope. Intensive conservation practices are needed to control runoff and erosion where this soil is cultivated. Other limitations for use of this soil are low to very low fertility, leaching, droughtiness, and soil blowing. Nearly all of the acreage is forested, and only a very small acreage is pastured or cultivated. Capability unit IVe–2; woodland group 3s2.

Weston Series

The Weston series consists of poorly drained, nearly level soils on smooth flats and in depressions on uplands and terraces. These soils formed in Coastal Plain and stream sediments. The seasonal high water table is at the surface.

In a representative profile, the surface layer is dark-gray and grayish-brown loamy sand about 13 inches

B1—14 to 18 inches, yellowish-brown (10YR 5/4) sandy loam; weak, medium, subangular blocky structure; friable, slightly sticky and slightly plastic; few small roots; clay coating and bridging of sand grains; medium acid; clear, wavy boundary.

B21t—18 to 32 inches, yellowish-red (5YR 5/6) clay loam; weak, fine and medium, subangular blocky structure; friable, sticky and plastic; few small roots; thin discontinuous clay films on faces of peds; few small mica flakes; strongly acid; clear, wavy boundary.

B22t—32 to 42 inches, yellowish-red (5YR 5/8) sandy clay loam; weak, fine and medium, subangular blocky structure; friable, slightly sticky and slightly plastic; common fine and medium pebbles; thin discontinuous clay films on faces of peds; few, fine mica flakes; strongly acid; clear, wavy boundary.

IIB3—42 to 50 inches, strong-brown (7.5YR 5/6) sandy loam; weak, fine, granular structure; very friable, slightly sticky and nonplastic; thin clay coating on most sand grains; common fine and medium pebbles; strongly acid; gradual, wavy boundary.

IIC—50 to 65 inches, reddish-yellow (7.5YR 6/6) coarse sand; single grain; loose; common fine and medium pebbles; strongly acid.

Wickham soils have a solum that ranges from 40 to about 60 inches in thickness. The A horizon is 5 to 15 inches thick and is loamy sand to sandy loam. The Ap and A1 horizons range from grayish brown in the uneroded areas to strong brown in the more eroded areas. The A2 horizon is brown to light yellowish brown. The B horizon ranges from 35 to about 45 inches thick and is clay loam to sandy loam. It is commonly yellowish red. Content of mica flakes ranges from few to common. The C horizon is reddish yellow to brownish yellow and ranges from coarse sand to gravelly loamy sand.

Wickham loamy sand, 0 to 2 percent slopes (WhA).—This is a well-drained soil on broad stream terraces. It has the profile described as representative for the series. The mapped areas are about as wide as they are long and range from 5 to 100 acres in size. The surface layer is grayish-brown to brown loamy sand 9 to 15 inches thick. This subsoil is yellowish red, friable clay loam to sandy loam about 35 to 45 inches thick.

Included with this soil in mapping were a few areas of Wickham soils that have a sandy loam or very fine loam surface layer. Also included were some areas of Kalmia and Kenansville soils and some small and large areas of borrow pits and mines along the Neuse River near Goldsboro (fig. 10).

Infiltration is moderate, and surface runoff is slow. This soil is easy to keep in good tilth and can be worked throughout a wide range of moisture content.

This soil is well suited to all locally grown crops, mainly corn, tobacco, soybeans, small grain, and truck crops. About 40 percent of the acreage is flooded for short periods. Except for this hazard, there are no other major hazards or limitations for intensive use of this soil. Nearly all of the acreage is cultivated, but a small acreage is pastured and forested. Capability unit I–1; woodland group 2o7.

Wickham loamy sand, 2 to 6 percent slopes (WhB).—This is a well-drained soil on smooth, low ridges on stream terraces. The mapped areas are elongated and range from 5 to 40 acres in size. The surface layer is grayish-brown to brown loamy sand 7 to 15 inches thick. The subsoil is yellowish-red, friable clay loam to sandy loam about 35 to 45 inches thick.

Included with this soil in mapping were a few areas of Wickham soils that have a sandy loam or a very fine sandy loam surface layer. Also included were small and large areas of borrow pits and mines along the Neuse River near Goldsboro and some areas of Kalmia and Kenansville soils.

Infiltration is moderate, and surface runoff is medium. This soil is easy to keep in good tilth and can be worked throughout a wide range of moisture content.

This soil is well suited to all locally grown crops, mainly corn, tobacco, soybeans, and small grain. Because of slope, the erosion hazard is moderate. About 40 percent of the acreage is subject to infrequent floods for short periods. Conservation practices are needed to effectively control runoff and erosion where this soil is cultivated. Most of the acreage is cultivated, and the rest is pastured and forested. The forested areas are on the shortest slopes of this mapping unit. Capability unit IIe–1; woodland group 2o7.

Wickham sandy loam, 2 to 6 percent slopes, eroded (WkB2).—This is a well-drained soil on smooth, low ridges on stream terraces. The mapped areas are elongated and range from 5 to 15 acres in size. The surface layer is grayish brown in the uneroded areas to strong brown in the more eroded areas and is dominantly sandy loam 5 to 8 inches thick. In places, it is a mixture of material from the original surface layer and from the subsoil. The subsoil is yellowish-red, friable clay loam to sandy loam about 35 to 40 inches thick.

Included with this soil in mapping were a few areas of Wickham soils that have a loamy sand or very fine sandy loam surface layer, and some eroded spots where the subsoil is exposed. Also included were some small and large areas of borrow pits and mines and some areas of Kalmia soils.

Infiltration is moderately slow, and surface runoff is medium. Because the surface layer is thin, this soil is difficult to keep in good tilth but can be worked throughout a fairly wide range of moisture content. The more eroded areas crust as they dry after a hard rain or become cloddy if worked when wet. This affects germination and causes poor or uneven crop growth (fig. 11).

This soil is well suited to all locally grown crops, mainly corn, soybeans, small grain, and pasture. About 40 percent of the acreage is subject to infrequent floods for short periods. Because of slope, the erosion hazard is moderate, and conservation practices are needed to effectively reduce runoff and control erosion where this soil is cultivated. Most of the acreage is cultivated or pastured, and the rest is forested. Capability unit IIe–1; woodland group 2o7.

Use and Management of the Soils

This section discusses use and management of the soils for crops and pasture, woodland, wildlife, and engineering.

Use of the Soils for Crops and Pasture[2]

This section has three main parts. The first describes the capability grouping of soils in the capability classi-

[2] C. C. ABERNATHY, conservation agronomist, and BOBBY BROCK, District conservationist, Soil Conservation Service, helped prepare this section.

Figure 10.—**Borrow pits in an area of Wickham soils along the Neuse River.**

fication system. The second describes the capability units in Wayne County and gives general suggestions for management of the soils in each capability unit. The third gives estimated yields for important crops grown under high-level management.

Capability grouping

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The groups are made according to the limitations of the soils when used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops requiring special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forest trees or engineering.

In the capability system, all kinds of soils are grouped at three levels, the capability class, subclass, and unit. These are discussed in the following paragraphs.

Capability Classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use, defined as follows:

Class I. Soils have few limitations that restrict their use.

Class II. Soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.

Figure 11.—**Poor stand and uneven growth of corn on Wickham sandy loam, 2 to 6 percent slopes, eroded.**

Class III. Soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Class IV. Soils have very severe limitations that reduce the choice of plants, require very careful management, or both.

Class V. Soils are not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife.

Class VI. Soils have severe limitations that make

cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in some parts of the United States but not in Wayne County, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only the subclasses indicated by *w*, *s*, and *c*, because the soils in class V are subject to little or no erosion, though they have other limitations that restrict

and permeability is moderately rapid. This soil is fairly easy to keep in good tilth and can be worked throughout a wide range of moisture content. Crops respond well to lime and fertilizer.

This soil is fairly well suited to most crops grown locally. Because slopes are short, row crops generally are not grown. Most of the acreage is forested, and the rest is cultivated and pastured.

The erosion hazard is severe where this soil is cultivated. This soil has moderate limitations because of low to very low fertility, leaching, droughtiness, and soil blowing. Erosion and runoff can be reduced and organic-matter content maintained by managing all crop residue, protecting the soil with soil-conserving crops 50 to 75 percent of the time, tilling on the contour, and strip-cropping. Natural draws, field borders, and other outlets for disposal of surface water need to be vegetated with perennial grass, preferably a sod-forming type. Liberal fertilization in split applications is needed for good crop growth.

A suitable cropping system is 2 or more years of close-growing crops followed by 2 years of row crops and a cover crop after the first year row crop. Another is 1 or more years of close-growing crops followed by 1 year of row crops. Minimum tillage preserves crop residue on the surface. Perennial grasses are suitable close-growing crops.

CAPABILITY UNIT IIIw–2

Only Coxville loam is in this unit. This is a poorly drained, nearly level soil on uplands and terraces. The surface layer is loam, and the subsoil is firm sandy clay to friable sandy clay loam.

This soil is medium in natural fertility and low in organic-matter content. Available water capacity is medium, and permeability is moderately slow. This soil is difficult to keep in good tilth and can be worked within only a narrow range of moisture content. Crops respond well to lime and fertilizer.

Where artificially drained, this soil is well suited to a few locally grown crops, mainly corn and soybeans. Most of the acreage is in forest, and the rest is cultivated and in pasture.

Wetness is a severe limitation because of the seasonal high water table, moderately slow permeability, and surface ponding. Drainage is the major concern in management. Organic-matter content can be maintained and soil tilth and structure improved by proper management of all crop residue.

A suitable cropping system is 3 or more years of pasture followed by 2 years of clean-tilled crops. Another is 1 or more years of soil-conserving crops followed by 1 year of clean-tilled crops.

CAPABILITY UNIT IIIw–3

This unit consists of poorly drained to very poorly drained, nearly level soils on uplands and terraces. The surface layer is loamy sand to loam, and the subsoil is friable or very friable sandy loam or silt loam to clay loam.

The soils in this unit are medium to low in natural fertility and low to medium in organic-matter content. Available water capacity is medium to high, and permeability is moderately slow to moderately rapid. These soils are easy to keep in good tilth and can be worked throughout a wide range of moisture content. Crops respond well to lime and fertilizer.

Where artificially drained, these soils are well suited to a few locally grown crops, mainly corn, soybeans, and fescue. Most of the acreage is forested, and the rest is cultivated and pastured.

Wetness is a severe limitation because of the seasonal high water table, and artificial drainage is needed for most crops. Row crops can be grown every year. All crop residue should be properly managed and returned to the soil. Organic-matter content and tilth can be maintained by growing perennial grasses and legumes 25 to 50 percent of the time.

CAPABILITY UNIT IIIw–5

Only Chewacla loam is in this unit. This is a somewhat poorly drained, nearly level soil on flood plains subject to very frequent floods. The surface layer is loam, and the subsoil is friable sandy loam to clay loam.

This soil is low in natural fertility and organic-matter content. Available water capacity is high and permeability is moderate. This soil is easy to keep in good tilth and can be worked throughout a fairly wide range of moisture content. Crops respond well to lime and fertilizer.

This soil is well suited to corn, soybeans, bermudagrass, and fescue. Most of the acreage is in forest, and the rest is cultivated and in pasture.

Wetness is a severe limitation because of the seasonal high water table and very frequent floods. Drainage and flood control are major concerns in management. Organic-matter content can be maintained and soil tilth improved by returning large quantities of crop residue to the soil.

A suitable cropping system is 1 or more years of a close-growing crop followed by 1 or 2 years of row crops. Perennial grass is a suitable close-growing crop.

CAPABILITY UNIT IIIs–1

Only Troup sand is in this unit. This is a well-drained, nearly level to gently sloping soil on uplands. The surface layer is sand 40 to 70 inches thick. The subsoil is friable sandy loam to sandy clay loam.

This soil is very low in natural fertility and organic-matter content. Available water capacity is very low, and permeability is moderately rapid. This soil is fairly easy to keep in good tilth and can be worked throughout a wide range of moisture content. Crops respond fairly well to lime and fertilizer.

This soil is fairly well suited to a few crops grown locally. Most of the acreage is forested.

This soil has severe limitations because of low fertility, very low organic-matter content, droughtiness, and leaching. Soil blowing is a severe hazard. Soil blowing can be reduced and organic-matter content maintained by properly managing all crop residue and planting soil-conserving crops, preferably perennials, 50 percent or more of the time. Crop residue and organic matter are depleted rapidly in this soil. All major draws and field borders for disposal of surface water need to be vegetated with perennial grass, preferably a sod-forming type. Fertilizers, particularly nitrogen, are added in split applications.

A cropping system that adds large amounts of durable residue is needed. A suitable system is 3 or more years of perennial grass or legumes followed by 1 or 2 years of row crops. Another is 2 years of densely growing crops followed by 1 year of row crops. Crops should be planted in strips.

CAPABILITY UNIT IVe-1

Only Kalmia loamy sand, 10 to 15 percent slopes, is in this unit. This is a well-drained soil on uplands. The surface layer is loamy sand, and the subsoil is friable sandy clay loam to sandy loam.

This soil is low in natural fertility and organic-matter content. Available water capacity is medium, and permeability is moderate. This soil is easy to keep in good tilth and can be worked throughout a wide range of moisture content. Crops respond well to lime and fertilizer.

This soil is fairly well suited to most crops grown locally. Because slopes commonly are short, row crops generally are not grown. Nearly all of the acreage is in forest, and the rest is cultivated and in pasture.

Because this soil is strongly sloping, runoff and erosion are severe hazards in cultivated areas. Erosion and runoff can be reduced and tilth improved by protecting the soil 75 percent or more of the time with soil-conserving crops, cultivating on the contour, grassing field borders, stripcropping, establishing diversions, and managing all crop residue. Natural draws and other outlets for disposal of surface water need to be vegetated with perennial grass, preferably a sod-forming type.

A suitable cropping system is 3 or more years of perennial grasses or legumes followed by 1 year of row crops. Perennial grasses are suitable soil-conserving crops.

CAPABILITY UNIT IVe-2

Only Wagram loamy sand, 10 to 15 percent slopes, is in this unit. This is a well-drained soil on uplands. The surface layer is loamy sand 20 to 40 inches thick. The subsoil is friable sandy clay loam to sandy loam.

This soil is low to very low in natural fertility and organic-matter content. Available water capacity is low, and permeability is moderately rapid. This soil is fairly easy to keep in good tilth and can be worked throughout a wide range of moisture content. Crops respond well to lime and fertilizer.

This soil is fairly well suited to most crops grown locally. Because slopes are short, row crops generally are not grown. Most of the acreage is in forest, and the rest is in pasture or cultivated.

Because of slope, water erosion and soil blowing are very severe hazards where this soil is cultivated. The soil has moderate limitations because of low to very low fertility, leaching, and droughtiness. Erosion and runoff can be reduced and organic-matter content increased by managing all crop residue, protecting the soil with close-growing crops 75 percent or more of the time, cultivating on the contour, stripcropping, and establishing diversions. Natural draws, field borders, and other outlets for disposal of surface water need to be vegetated with perennial grasses, preferably a sod-forming type.

A suitable cropping system is 3 or more years of perennial grasses or legumes followed by row crops for 1 year. Another is 4 or more years of perennial grasses or legumes followed by 2 years of row crops.

CAPABILITY UNIT IVw-2

Only Leaf loam is in this unit. This is a poorly drained, nearly level soil on uplands and terraces. The surface layer is loam, and the subsoil is very firm clay loam.

This soil is medium in natural fertility and low in organic-matter content. Available water capacity is high, and permeability is slow. This soil is difficult to keep in good tilth and can be worked within only a range of moisture content. Crops respond well to lime and fertilizer.

Where artificially drained, this soil is suited to a few locally grown crops, mainly corn, soybeans, and fescue, but it is better suited to pasture and hay. Most of the acreage is in forest, and the rest is cultivated and in pasture.

Wetness is a very severe limitation because of the seasonal high water table and slow permeability. Poor drainage, lack of outlets, and infrequent floods in some areas are major concerns in management. Where this soil is cultivated, organic-matter content can be maintained and tilth and soil structure improved by managing all crop residue.

CAPABILITY UNIT IVw-4

This unit consists of poorly drained and very poorly drained, nearly level soils on flood plains subject to very frequent flooding, and poorly drained soils on terraces subject to infrequent flooding. The surface layer is sandy loam to loam. The underlying layer is dominantly friable sandy loam to clay loam.

These soils are low to medium in natural fertility and low to high in organic-matter content. Available water capacity is medium to high, and permeability ranges from moderate to moderately rapid. These soils are easy to keep in good tilth and can be worked throughout a wide range of moisture content. Crops respond fairly well to lime and fertilizer.

Where artificially drained, these soils are suited to corn, soybeans, and fescue. Most of the acreage is in forest, and the rest is cultivated and in pasture.

Wetness is a very severe limitation because of the seasonal high water table, flooding, and lack of outlets for drains. These are the major concerns in management. Organic-matter content can be maintained and soil tilth and structure improved by managing all crop residue.

CAPABILITY UNIT IVs-1

This unit consists of excessively drained, nearly level to gently sloping soils on uplands and terraces. The surface layer is sand more than 72 inches thick or is sand 30 to 60 inches thick over weakly cemented sand or loamy sand.

The soils in this unit are very low in natural fertility and organic-matter content. Available water capacity is very low, and permeability is moderate to rapid. These soils are fairly easy to keep in good tilth and can be worked throughout a wide range of moisture content. During prolonged dry periods crops are severely damaged by lack of sufficient moisture. Crops respond poorly to fertilizer and lime.

These soils are fairly well suited to a few locally grown crops. They are better suited to slash pine, long-

TABLE 2.—*Estimated average acre yields of crops and pasture plants under a high level of management*

[Absence of a yield figure means that the crop is not commonly grown on the soil, or there is no data on which to base an estimate]

Soils	Corn	Soybeans	Cotton	Tobacco	Cucumbers	Sweet potatoes	Wheat	Oats	Hay	Pasture	
									Coastal bermuda grass	Coastal bermuda grass	Fescue and ladino clover
	Bu.	*Bu.*	*Lbs.*	*Lbs.*	*Cwt.*	*Bu.*	*Bu.*	*Bu.*	*Tons*	*AUD*[1]	*AUD*[1]
Aycock very fine sandy loam, 0 to 2 percent slopes	125	50	3,000	550	250	490	60	90	5.4	360	170
Aycock very fine sandy loam, 2 to 6 percent slopes	120	45	2,800	500	235	465	55	85	5.2	355	160
Aycock very fine sandy loam, 2 to 6 percent slopes, eroded	110	40	2,700	450	215	----	50	80	5.0	320	160
Barclay very fine sandy loam	130	50	2,600	450	300	----	50	85	5.0	330	260
Bibb sandy loam	80	35	----	----	----	----	----	----	----	----	225
Chewacla loam	100	40	----	----	----	----	----	----	----	300	230
Coxville loam	125	45	----	----	----	----	45	----	----	----	245
Craven sandy loam, 2 to 6 percent slopes, eroded	70	30	----	----	----	----	30	70	4.0	270	160
Craven sandy loam, 6 to 10 percent slopes, eroded	----	----	----	----	----	----	----	----	3.6	230	140
Dragston loamy sand	105	40	2,500	400	280	----	50	80	4.8	320	200
Exum very fine sandy loam	125	50	2,800	450	290	550	60	90	5.2	340	215
Goldsboro loamy sand	125	50	3,000	450	290	550	60	90	5.4	355	200
Johns sandy loam	120	45	2,600	----	270	----	50	75	4.6	300	230
Johnston loam	90	35	----	----	----	----	----	----	----	----	180
Kalmia loamy sand, 0 to 2 percent slopes	115	45	2,900	500	225	500	55	90	5.4	360	165
Kalmia loamy sand, 2 to 6 percent slopes	110	40	2,700	450	210	----	50	85	5.2	355	160
Kalmia loamy sand, 10 to 15 percent slopes	----	----	----	----	----	----	----	----	----	320	145
Kalmia loamy sand, 15 to 25 percent slopes	----	----	----	----	----	----	----	----	----	290	135
Kenansville loamy sand	85	35	2,300	400	----	425	45	75	4.4	285	----
Kinston loam	80	35	----	----	----	----	----	----	----	----	225
Lakeland sand	55	20	----	----	----	----	----	----	3.0	200	----
Leaf loam	100	35	----	----	----	----	----	----	----	----	260
Leon sand	----	----	----	----	----	----	----	----	----	----	----
Liddell very fine sandy loam	130	50	----	----	300	----	50	----	----	----	260
Lucy loamy sand	100	30	2,500	400	----	450	40	80	4.8	320	135
Lumbee sandy loam	110	45	----	----	----	----	----	----	----	----	260
Lynchburg sandy loam	130	50	2,600	450	300	----	50	85	5.0	330	260
Myatt very fine sandy loam	120	45	----	----	300	----	45	----	----	----	260
Nahunta very fine sandy loam	120	50	2,500	----	300	----	50	85	4.8	320	260
Nixonton very fine sandy loam	125	50	2,800	450	300	550	60	90	5.4	355	200
Norfolk loamy sand, 0 to 2 percent slopes	125	50	3,000	550	225	500	60	85	5.4	360	165
Norfolk loamy sand, 2 to 6 percent slopes	120	45	2,800	500	210	475	55	85	5.2	355	160
Norfolk loamy sand, 6 to 10 percent slopes	110	35	2,700	450	195	400	50	80	5.0	325	155
Norfolk sandy loam, 2 to 6 percent slopes, eroded	110	40	2,700	450	195	----	50	80	5.0	330	160
Pamlico muck	----	----	----	----	----	----	----	----	----	----	----
Pantego loam	130	50	----	----	----	----	----	----	----	----	260
Rains sandy loam	130	50	----	----	300	----	50	----	----	----	260
Rimini sand	55	20	----	----	----	----	----	----	3.0	200	----
Ruston loamy sand, 0 to 2 percent slopes	125	50	3,000	550	225	500	60	90	5.4	360	170
Ruston loamy sand, 2 to 6 percent slopes	120	45	2,800	500	210	475	55	85	5.2	355	160
Ruston sandy loam, 2 to 6 percent slopes, eroded	110	40	2,700	450	195	----	50	80	5.0	330	160
Torhunta loam	120	45	----	----	----	----	----	----	----	----	260
Troup sand	85	30	1,900	350	----	----	----	----	3.8	250	----
Wagram loamy sand, 0 to 6 percent slopes	100	35	2,500	400	----	450	40	80	4.8	320	135
Wagram loamy sand, 6 to 10 percent slopes	----	----	2,200	----	----	----	----	----	4.4	290	----
Wagram loamy sand, 10 to 15 percent slopes	----	----	----	----	----	----	----	----	4.0	270	----
Weston loamy sand	115	40	----	----	240	----	50	----	----	----	200
Wickham loamy sand, 0 to 2 percent slopes	125	50	2,700	500	225	500	60	90	5.4	360	210
Wickham loamy sand, 2 to 6 percent slopes	120	45	2,500	450	210	475	55	85	5.2	355	205
Wickham sandy loam, 2 to 6 percent slopes, eroded	110	40	2,400	400	195	----	50	80	5.0	320	205

[1] Animal-unit-days is a term used to express the carrying capacity of pasture. It is the number of animal units carried per acre multiplied by the number of days the pasture is grazed during a single grazing season without injury to the sod. An acre of pasture that provides 30 days of grazing for 2 cows has a carrying capacity of 60 cow-acre-days. An animal unit is 1 cow, steer, or horse, 5 hogs, or 7 sheep or goats.

TABLE 3.—*Woodland management*

Woodland group and map symbols	Potential productivity		Preferred species for planting		Degree of limitations		
	Tree species	Site Class	Broadleaf	Needleleaf	Erosion hazard	Equipment restrictions	Seedling mortality
Group 1w8: Somewhat poorly drained, nearly level soils that have a friable, loamy subsoil. They are on flood plains and are frequently flooded. Potential productivity is very high. The soils are well suited to needleleaf and broadleaf trees. Ch	Cottonwood Green ash Loblolly pine Red oak Sugarberry Swamp tupelo Sweetgum Sycamore Water oak Yellow-poplar Slash pine Willow oak Cherrybark oak	100 100 100 90 80 80 100 90 90 100 100 90 ---	Cottonwood, sweetgum, sycamore, yellow-poplar, cherrybark oak, water oak, green ash, willow oak, Shumard oak, white oak, swamp tupelo, swamp chestnut oak.	Loblolly pine, slash pine, longleaf pine, pond pine, baldcypress.	Slight	Moderate	Moderate.
Group 1w9: Very poorly drained to poorly drained, nearly level soils that have a friable, loamy subsoil. They are on flood plains and are frequently flooded and subject to ponding. The soils are suited to broadleaf and needleleaf trees. Js, Kn, Po	Cottonwood [1] Slash pine [1] Loblolly pine [1] Water oak [1] Tupelos Pond pine Sweetgum Yellow-poplar Willow oak Baldcypress	100 100 100 90–100 --- 70–80 100 110 100 ---	Sweetgum,[2] sycamore,[2] green ash, yellow-poplar, willow oak, water oak, swamp tupelo.	Loblolly pine, slash pine, pond pine, baldcypress.[2]	Slight	Severe [2]	Severe.[2]
Group 2o1: Well-drained, nearly level to sloping soils that have a friable, loamy subsoil. They are on uplands. Potential productivity is high. The soils are best suited to needleleaf trees. AyA, AyB, AyB2, NoA, NoB, NoC, NrB2, RuA, RuB, RyB2	Loblolly pine Slash pine Longleaf pine	90 90 70	None recommended	Loblolly pine, slash pine, longleaf pine.	Slight	Slight	Slight.
Group 2o7: Well drained and moderately well drained, nearly level to moderately steep soils that have a very friable to friable, loamy subsoil. They are on uplands and stream terraces. Potential productivity is high. The soils are suited to needleleaf and broadleaf trees. KaA, KaB, KaD, KaE, Nf, WhA, WhB, WkB2	Loblolly pine Slash pine Yellow-poplar Red oak White oak Longleaf pine Sweetgum Southern red oak	90 90 100 --- --- 70 90 80	Yellow-poplar, black walnut, sweetgum, cherrybark oak, Shumard oak, southern red oak, white oak, white ash, swamp chestnut oak.	Loblolly pine, slash pine, longleaf pine.	Slight	Slight	Slight.

See footnotes at end of table.

Group 2w2: Somewhat poorly drained, nearly level soils that have a friable, loamy subsoil. They are on stream terraces and are infrequently flooded. Potential productivity is high. The soils are best suited to needleleaf trees. Jo	Loblolly pine Slash pine Longleaf pine Sweetgum	90 90 70 90	None recommended	Loblolly pine, slash pine, longleaf pine, pond pine, baldcypress.	Slight	Moderate	Moderate.
Group 2w3: Poorly drained, nearly level soils that have a friable, loamy subsoil. They are on uplands and are subject to ponding. Potential productivity is high. The soils are best suited to needleleaf trees. Ra	Loblolly pine Slash pine Longleaf pine Sweetgum Tupelos	90 90 70 90 ---	None recommended	Slash pine,[2] loblolly pine,[2] longleaf pine,[2] baldcypress.[2]	Slight	Severe [2]	Severe.[2]
Group 2w8: Moderately well drained and somewhat poorly drained, nearly level soils that have a friable and very friable, loamy subsoil. They are on uplands and stream terraces. Potential productivity is high. The soils are suited to needleleaf and broadleaf trees. Ba, Dr, Ex, Go, Ly, Na	Loblolly pine Slash pine Sweetgum Yellow-poplar Water oak Blackgum Red oak White oak Longleaf pine	90 90 90 100 90 --- --- --- 70–80	Yellow-poplar, sycamore, sweetgum, water oak, willow oak, white oak, cherrybark oak, swamp chestnut oak, green ash, swamp tupelo.	Loblolly pine, slash pine, longleaf pine, pond pine, baldcypress.	Slight	Moderate	Moderate.
Group 2w9: Poorly drained and very poorly drained, nearly level soils that have a very friable, loamy, to very firm, clayey subsoil. They are on floodplains, stream terraces, and uplands. They are subject to very frequent flooding, or infrequent flooding, or ponding. Potential productivity is high. The soils are best suited to water-tolerant broadleaf and needleleaf trees. Bb, Co, Le, Ls, Lv, My, To, We	Cottonwood Loblolly pine [1] Slash pine [1] Longleaf pine Pond pine Tupelo Baldcypress Sweetgum [1] Green ash Red oak White oak Sycamore Yellow-poplar Water oak Willow oak	100 90 90 70 70 --- --- 90 90 --- --- --- 100 90 90	Cottonwood, green ash, sweetgum,[2] sycamore,[2] swamp tupelo, water tupelo, Shumard oak,[2] water oak,[2] willow oak, cherrybark oak.	Loblolly pine,[2] slash pine,[2] pond pine,[2] baldcypress.[2]	Slight	Severe [2]	Severe.[2]
Group 3s2: Well-drained, nearly level to strongly sloping soils that have a sandy surface layer 20 to 72 inches thick overlying friable, loamy subsoil. They are on uplands. Potential productivity is moderately high. The soils are best suited to needleleaf trees. Ke, Lu, Tr, WaB, WaC, WaD	Slash pine Loblolly pine Longleaf pine	80 80 60–70	None recommended	Slash pine, loblolly pine, longleaf pine.	Slight	Moderate	Moderate.

See footnotes at end of table.

TABLE 3.—*Woodland management*—Continued

Woodland group and map symbols	Potential productivity		Preferred species for planting		Degree of limitations		
	Tree species	Site class	Broadleaf	Needleleaf	Erosion hazard	Equipment restrictions	Seedling mortality
Group 3w2; Moderately well drained, gently sloping to sloping soils that have a firm loamy to very firm clayey subsoil. They are on uplands. Potential productivity is moderately high. The soils are best suited to needleleaf trees. CrB2, CrC2	Loblolly pine Slash pine Longleaf pine	80 80 70	None recommended	Slash pine, loblolly pine, longleaf pine.	Slight	Moderate	Moderate.
Group 4s2: Excessively drained, nearly level to gently sloping soils that are sandy to a depth of 72 inches or more. They are on uplands and stream terraces. Potential productivity is moderate. The soils are best suited to needleleaf trees. La	Slash pine Loblolly pine Longleaf pine	70 70 60	None recommended	Slash pine, loblolly pine, longleaf pine.	Slight	Moderate	Moderate.
Group 4w2: Somewhat poorly drained, nearly level soils that have a sandy surface layer and a weakly cemented, sandy subsoil. They are on uplands and stream terraces. Potential productivity is moderate. The soils are best suited to needleleaf trees. Ln	Slash pine Loblolly pine Longleaf pine	70 70 60	None recommended	Slash pine, loblolly pine, longleaf pine.	Slight	Moderate	Moderate.
Group 4w3: Very poorly drained, nearly level organic soils that have a muck surface layer 12 to 50 inches thick over a sandy lower layer. They are on floodplains, and are very frequently flooded. Potential productivity is moderate. The soils are suited to needleleaf trees. Pa	Slash pine [1] Loblolly pine [1] Tupelos Pond pine Baldcyress	70 70 --- 60 ---	None recommended	Slash pine,[2] loblolly pine,[2] pond pine,[2] baldcyress,[2] atlantic white cedar.[2]	Slight	Severe [2]	Severe.[2]
Group 5s3: Excessively drained, nearly level soils that have a sandy surface layer 30 to 60 inches thick over a friable, weakly cemented, sandy subsoil. They are on uplands. Potential productivity is low. The soils are best suited to needleleaf trees. Rm	Longleaf pine Slash pine	50 60	None recommended	Slash pine, longleaf pine.	Slight	Moderate	Severe.

[1] Potential productivity is attainable only where surface drainage is adequate.
[2] Tree planting is feasible only where surface drainage is adequate.

a means of expressing information useful in managing soils for tree crops. Terms used in the table are defined in the following paragraphs.

Potential productivity.—This is expressed as a site class for a given tree species. Site class is the numerical designation of the relative potential productivity of the soils for the trees named in the table. It is based on the site index, or the average total height, in feet, of the dominant and codominant trees in an even-aged stand at age 30 for cottonwood, at age 35 for sycamore, and at age 50 for all the other trees. The site index is rounded to the nearest 10 feet to determine the site class. For some trees, especially broadleaf trees, the site class is estimated on the basis of the site class of other species on the same soil. Expected yields can be estimated on the basis of the site class (*4*).

Management problems.—Erosion hazard, equipment restrictions, and seedling mortality are concerns in management. Windthrow is not generally a hazard on the soils in Wayne County except when winds are abnormally high, as during a hurricane.

Erosion hazard.—Potential erosion is rated to indicate the hazard of erosion as the result of woodland management. Steepness of slope is the major factor considered, but the characteristics of a particular soil also affect the rating. Generally the rating is *slight* where slopes are 0 to 6 percent, *moderate* where 6 to 10 percent, and *severe* where more than 10 percent. These general ratings by slope are modified where the relative erodibility caused by soil characteristics intensifies or offsets the effect of runoff.

Equipment restrictions.—This rating concerns the soil characteristics and topographic features that restrict or prohibit the use of equipment commonly employed in constructing access roads, harvesting forest products, controlling undesirable vegetation and fire, or in other management operations. Excessive wetness and a coarse sandy surface texture are the chief factors restricting use of equipment in Wayne County. The rating is *slight* if conventional equipment can be used during any time of the year, except for short periods of heavy rainfall. The soils are moderately well drained to excessively drained, are not subject to overflow or ponding, and have slopes of less than 15 percent. The rating is *moderate* if conventional equipment can be used from March to December, but overflow occurs occasionally. The water table is generally below the surface or seldom ponds the surface for extended periods, and slopes are less than 25 percent. The rating is *severe* if use of conventional equipment is limited to the driest months or to periods between overflows or because slopes are more than 25 percent.

Seedling mortality.—This term refers to the expected loss of naturally occurring or planted tree seedlings of preferred species as a result of unfavorable soil characteristics or topographic features. Competition from other plants is not considered in rating seedling mortality. It is assumed that healthy seedlings of good quality have been properly planted or that the source of seed is adequate for seedlings established by natural reseeding, and that environmental conditions are normal for both planted and naturally established seedlings. The rating is *slight* if average mortality does not ordinarily exceed 25 percent, *moderate* if average mortality is 25 to 50 percent, and *severe* if average mortality exceeds 50 percent.

Preferred species for planting.—The principal commercial tree species to favor in existing stands and that are suitable for planting are listed in the table. Preferred species were selected on the basis of their growth rates and the quality, value, and general marketability of the wood crop.

Woodland grouping

A woodland group consists of soils which have comparable potential productivity and comparable limitations, produce similar wood crops, and require similar management or conservation practices.

In table 3, each woodland group is briefly described. The potential productivity and the degree of major limitations and hazards in management are rated, and trees preferred for planting are named.

In the table, a symbol consisting of three elements is used to designate each woodland group. The first element in the symbol is a numeral that denotes the relative potential productivity of the soils in the group. It expresses site quality based on the site index of one or more commercially important forest trees. The numeral 1 indicates very high potential productivity; the numeral 2, high potential productivity (fig. 12); the numeral 3, moderately high potential productivity; the numeral 4, moderate potential productivity; and the numeral 5, low potential productivity.

The second element in the symbol is a letter that denotes the soil property or physiographic characteristic that is the primary cause of hazards, limitations, or restrictions for woodland use or management. The letter "w" indicates excessive wetness (fig. 13). Soils with this designation are those in which excessive water, either seasonally or year long, causes significant limitations for woodland use. Such soils have restricted drainage, have a seasonal high water table, or are susceptible to overflow which adversely affects growth of trees or management of stands. The letter "s" indicates that management limitations are caused primarily by the amount of sandy material in the soil profile. Such soils commonly have no textural B horizon, have a low available water capacity, and normally are low in content of available plant nutrients. The high sand content also restricts the use of equipment. The letter "o" indicates that there are no significant soil-related limitations. Some soils may have more than one limiting characteristic. In such cases priority was assigned in the order that the characteristics are listed above.

The third element in the group symbol is a numeral that denotes the degree of hazards or limitations and the general suitability of the soils for certain kinds of trees. The numeral 1 indicates that the soils have no significant management limitations and that they are best suited to needleleaf trees. The numeral 2 indicates that the soils have slight to moderate limitations and are best suited to needleleaf trees. The numeral 3 indicates that the soils have moderate to severe limitations and are best suited to needleleaf trees. The numeral 7 indicates that the soils have no significant management problems and are well suited to needleleaf or broadleaf trees. The numeral 8 indicates that the soils have slight to mod-

Figure 12.—**A managed stand of loblolly pine on Barclay very fine sandy loam. The stand was thinned 3 years previously. The site class for loblolly pine on this soil is 90.**

erate limitations and are well suited to needleleaf or broadleaf trees. The numeral 9 indicates that the soils have moderate to severe limitations and are suited to needleleaf or broadleaf trees.

The woodland group to which each soil mapping unit is assigned can be determined by referring to the "Guide to Mapping Units."

Use of the Soils for Wildlife [4]

The soils of Wayne County produce a wide variety of plants that provide food, cover, and habitat for many kinds of wildlife. Squirrels, rabbits, quail, and other kinds of upland game are abundant. Raccoon, muskrat, mink, and other fur bearers live along watercourses throughout the county, and a few deer, turkey, and other larger game live in some parts of the county. In winter, mallard, wood, and black ducks are numerous along the Neuse River and its tributaries.

In table 4, the suitability of the soils for elements of wildlife habitat and kinds of wildlife is rated. The terms used in the table are explained in the following paragraphs.

Grasses and legumes are fescue, clover, shrub lespedeza, annual lespedeza, ryegrass, lovegrass, panicgrass, and other domestic grasses and legumes established by planting that furnish food and cover for wildlife.

Grain and seed crops are primarily corn, dove proso millet, browntop millet, wheat, oats, and other agricultural crops that provide food for wildlife. The rating reflects the suitability of the soil to produce these crops under good management.

[4] By JOHN P. EDWARDS, biologist, Soil Conservation Service.

Figure 13.—A natural stand of loblolly pine on Lumbee sandy loam. The site class for loblolly pine on this soil is 90.

Wild herbaceous plants are pokeweed, tick clover, ragweed, wild strawberries, and other perennial plants that provide food and cover for game. The rating reflects the suitability of the soil to produce these plants under natural conditions with little or no management.

Wetland food and cover plants are rushes, sedges, smartweed, aneilema, wild millet, and other wild herbaceous plants that grow primarily in wetland areas. The rating reflects the suitability of the soil to produce these plants under natural conditions.

Hardwood trees and shrubs are oak, hickory, autumn olive, pyracantha, dogwood, poplar, multiflora rose, grapes, and other hardwood trees, shrubs, and vines that produce fruit, buds, nuts, and foliage used by wildlife for both food and cover. The rating reflects the suitability of the soil to produce these plants. Management is not considered in the rating, although it may be needed.

Low-growing coniferous woody plants are pines that provide mainly cover for wildlife, although pine seed is used as food to some extent. The rating reflects the suitability of the soil to produce these plants under natural conditions.

Shallow water development are developed shallow ponds or flooded areas. In most cases, a great deal of management is required to establish or improve this kind of habitat.

Openland wildlife refers to birds and mammals that generally live in or near open areas. Mourning doves, quail, red foxes, cottontail rabbits, woodchuck, and many species of song birds are typical examples of openland wildlife. Openland areas are also very important to woodland wildlife, and this interrelationship should be considered in planning and managing this kind of habitat.

Woodland wildlife refers to deer, bear, marsh rabbits, bobcats, squirrels, and other wildlife that live primarily in wooded areas.

Wetland wildlife refers to muskrats, mink, raccoon, redwing blackbirds, snipe, ducks, and other birds and

TABLE 4.—*Suitability of the soils for elements of*

Soil	Elements of wildlife habitat—			
	Grasses and legumes	Grain and seed crops	Wild herbaceous plants	Wetland food and cover plants
Aycock very fine sandy loam, 0 to 2 percent slopes	Well suited	Well suited	Well suited	Unsuited
Aycock very fine sandy loam, 2 to 6 percent slopes	Well suited	Well suited	Well suited	Unsuited
Aycock very fine sandy loam, 2 to 6 percent slopes, eroded	Well suited	Well suited	Well suited	Unsuited
Barclay very fine sandy loam	Suited	Suited	Well suited	Suited
Bibb sandy loam	Poorly suited	Unsuited	Poorly suited	Well suited
Chewacla loam	Poorly suited	Unsuited	Poorly suited	Suited
Coxville loam	Suited	Poorly suited	Suited	Well suited
Craven sandy loam, 2 to 6 percent slopes, eroded	Well suited	Well suited	Well suited	Unsuited
Craven sandy loam, 6 to 10 percent slopes, eroded	Well suited	Suited	Well suited	Unsuited
Dragston loamy sand	Suited	Suited	Well suited	Suited
Exum very fine sandy loam	Well suited	Well suited	Well suited	Poorly suited
Goldsboro loamy sand	Well suited	Well suited	Well suited	Poorly suited
Johns sandy loam	Suited	Suited	Well suited	Suited
Johnston loam	Poorly suited	Unsuited	Poorly suited	Well suited
Kalmia loamy sand, 0 to 2 percent slopes	Well suited	Well suited	Well suited	Unsuited
Kalmia loamy sand, 2 to 6 percent slopes	Well suited	Well suited	Well suited	Unsuited
Kalmia loamy sand, 10 to 15 percent slopes	Well suited	Suited	Well suited	Unsuited
Kalmia loamy sand, 15 to 25 percent slopes	Suited	Poorly suited	Well suited	Unsuited
Kenansville loamy sand	Well suited	Suited	Well suited	Unsuited
Kinston loam	Poorly suited	Unsuited	Poorly suited	Well suited
Lakeland sand	Poorly suited	Poorly suited	Poorly suited	Unsuited
Leaf loam	Suited	Poorly suited	Suited	Well suited
Leon sand	Poorly suited	Poorly suited	Poorly suited	Poorly suited
Liddell very fine sandy loam	Suited	Poorly suited	Suited	Well suited
Lucy loamy sand	Well suited	Well suited	Well suited	Unsuited
Lumbee sandy loam	Suited	Poorly suited	Suited	Well suited
Lynchburg sandy loam	Suited	Suited	Well suited	Suited
Myatt very fine sandy loam	Suited	Poorly suited	Suited	Well suited
Nahunta very fine sandy loam	Suited	Suited	Well suited	Suited
Nixonton very fine sandy loam	Well suited	Well suited	Well suited	Poorly suited
Norfolk loamy sand, 0 to 2 percent slopes	Well suited	Well suited	Well suited	Unsuited
Norfolk loamy sand, 2 to 6 percent slopes	Well suited	Well suited	Well suited	Unsuited
Norfolk loamy sand, 6 to 10 percent slopes	Well suited	Suited	Well suited	Unsuited
Norfolk sandy loam, 2 to 6 percent slopes, eroded	Well suited	Well suited	Well suited	Unsuited
Pamlico muck	Unsuited	Unsuited	Unsuited	Well suited
Pantego loam	Poorly suited	Unsuited	Poorly suited	Well suited
Rains sandy loam	Suited	Poorly suited	Suited	Well suited
Rimini sand	Poorly suited	Poorly suited	Poorly suited	Unsuited
Ruston loamy sand, 0 to 2 percent slopes	Well suited	Well suited	Well suited	Unsuited
Ruston loamy sand, 2 to 6 percent slopes	Well suited	Well suited	Well suited	Unsuited
Ruston sandy loam, 2 to 6 percent slopes, eroded	Well suited	Well suited	Well suited	Unsuited
Torhunta loam	Poorly suited	Unsuited	Poorly suited	Well suited
T d	Poorly suited	Poorly suited	Poorly suited	Unsuited

wildlife habitat and kinds of wildlife

Elements of wildlife habitat—Continued			Kinds of wildlife		
Hardwood trees and shrubs	Low growing coniferous woody plants	Shallow water development	Openland	Woodland	Wetland
Well suited	Poorly suited	Suited	Well suited	Well suited	Poorly suited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Well suited	Poorly suited	Suited	Suited	Well suited	Suited.
Well suited	Well suited	Unsuited	Poorly suited	Well suited	Suited.
Well suited	Well suited	Unsuited	Poorly suited	Well suited	Poorly suited.
Well suited	Suited	Suited	Suited	Well suited	Well suited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Well suited	Poorly suited	Poorly suited	Suited	Well suited	Suited.
Well suited	Poorly suited	Suited	Well suited	Well suited	Poorly suited.
Well suited	Poorly suited	Suited	Well suited	Well suited	Poorly suited.
Well suited	Poorly suited	Suited	Suited	Well suited	Suited.
Well suited	Well suited	Unsuited	Poorly suited	Well suited	Suited.
Well suited	Poorly suited	Suited	Well suited	Well suited	Poorly suited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Well suited	Poorly suited	Unsuited	Suited	Well suited	Unsuited.
Well suited	Poorly suited	Poorly suited	Well suited	Well suited	Poorly suited.
Well suited	Well suited	Unsuited	Poorly suited	Well suited	Suited.
Poorly suited	Well suited	Unsuited	Poorly suited	Poorly suited	Unsuited.
Well suited	Suited	Well suited	Suited	Well suited	Well suited.
Poorly suited	Poorly suited	Suited	Unsuited	Poorly suited	Poorly suited.
Well suited	Suited	Suited	Suited	Well suited	Suited.
Well suited	Poorly suited	Suited	Well suited	Well suited	Poorly suited.
Well suited	Suited	Suited	Suited	Well suited	Well suited.
Well suited	Poorly suited	Suited	Suited	Well suited	Suited.
Well suited	Suited	Suited	Suited	Well suited	Well suited.
Well suited	Poorly suited	Suited	Suited	Well suited	Suited.
Well suited	Poorly suited	Suited	Well suited	Well suited	Poorly suited.
Well suited	Poorly suited	Suited	Well suited	Well suited	Poorly suited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Unsuited	Well suited	Unsuited	Unsuited	Unsuited	Suited.
Well suited	Well suited	Suited	Poorly suited	Well suited	Well suited.
Well suited	Suited	Suited	Suited	Well suited	Well suited.
Poorly suited	Well suited	Unsuited	Poorly suited	Poorly suited	Unsuited.
Well suited	Poorly suited	Suited	Well suited	Well suited	Poorly suited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Well suited	Well suited	Poorly suited	Poorly suited	Well suited	Suited.
Poorly suited	Poorly suited	Poorly suited	Poorly suited	Poorly suited	Unsuited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Well suited	Suited	Poorly suited	Suited	Well suited	Suited.
Well suited	Poorly suited	Suited	Well suited	Well suited	Poorly suited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.
Well suited	Poorly suited	Unsuited	Well suited	Well suited	Unsuited.

mammals that live primarily in swamps, in marshes, and near ponds.

In table 4, the suitability of the soils for establishing, maintaining, or improving the elements of wildlife habitat and kinds of wildlife is rated well suited, suited, poorly suited, and unsuited, depending on the degree of limitations of the soil. Soil properties such as surface texture, wetness, available water capacity, permeability, and slope were considered in the ratings.

It should be noted that the ratings provide only general guidelines. A soil rated as suited for grasses and legumes may be unsuited for certain species of each, although most species normally grown in the county can be expected to grow well. Onsite inspection and planning are required for developing a given habitat.

Engineering Uses of the Soils [5]

Some soil properties are of special interest to engineers because they affect the construction and maintenance of roads, airports, pipelines, building foundations, dwellings, facilities for water storage, earthen dams, erosion-control structures, drainage systems, sewage-disposal systems, recreational facilities, and the suitability of soils for topsoil, road fill, and subgrade. Permeability, compaction characteristics, and shrink-swell potential are among the properties most important to the engineer. Other important features are grain size, plas-

[5] S. T. CURRIN, professional engineer, and B. H. JONES, civil engineer, Soil Conservation Service, assisted in writing this section.

TABLE 5.—*Engineering*

[Tests performed by North Carolina State Highway Commission according to standard procedures

Soil name and location	Parent material	Report No.	Depth	Moisture density [1]	
				Maximum dry density	Optimum moisture
		S63NC-96-	*In.*	*Lb./cu. ft.*	*Pct.*
Liddell very fine sandy loam: 7 miles east of Goldsboro, 400 feet east of intersection of U.S. Highway No. 13 and Road 1704, 150 feet northwest of U.S. Highway No. 13, in cultivated field.	Coastal plain sediments.	3–1	0–7	105	18
		3–3	11–34	120	10
		3–4	34–62	125	12
Myatt very fine sandy loam: 0.2 mile south of Mt. Olive, 1.1 miles southeast of intersection of Road 1947 and Business Highway 117, 50 feet southwest of Road 1947, in cultivated field.	Coastal plain sediments.	2–1	0–7	106	17
		2–4	15–37	110	16
		2–6	52–62	115	14
Nahunta very fine sandy loam: 1 mile north of Mt. Olive, 264 feet north of intersection of U.S. Highway No. 117 and Business Highway 117, 100 feet east of U.S. Highway No. 117, in cultivated field.	Coastal plain sediments.	1–1	0–8	114	13
		1–3	10–20	119	12
		1–5	30–44	115	15
Nixonton very fine sandy loam: 12 miles east of Goldsboro, 1,000 feet northwest of intersection of U.S. Highway No. 13 and Road 1568, in cultivated field.	Coastal plain sediments.	12–1	0–7	104	14
		12–3	10–25	116	13
		12–5	45–60	114	13
Norfolk loamy sand: 200 feet northwest of New Hope School, 200 feet northeast of Road 1003, in cultivated field.	Coastal plain sediments.	10–1	0–10	119	10
		10–3	12–24	119	13
		10–6	53–78	110	18
Torhunta loam: 1 mile east of Goldsboro, 0.3 mile southwest of intersection of U.S. Highway No. 70 and Road 1710, 100 feet west of Road 1710, in woods.	Coastal plain sediments.	7–2	4–14	108	14
		7–4	18–39	121	11
		7–6	49–62	125	10
Wickham loamy sand: 0.4 mile north of Seven Springs, 350 feet east of intersection of Roads 1737 and 1731, 20 feet north of Road 1737, in cultivated field.	Stream sediments (alluvium).	11–1	0–8	111	11
		11–4	14–28	111	17

[1] Based on AASHO Designation T 99, Method A. (*1*).

[2] Mechanical analyses according to AASHO Designation T 88. Results by this procedure may differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters

ticity, reaction, drainage, topography, and depth to seasonal high water table.

Estimates are generally to depths of about 5 feet, and therefore interpretations normally do not apply to greater depth. Much of the information in this section is given in tables 5, 6, and 7. The information in these tables can be used to:

1. Make soil and land use studies that will aid in selecting and evaluating areas for developing sewage disposal systems and industrial, business, residential, and recreational sites.
2. Make preliminary estimates of the engineering properties of soils in planning for agricultural drainage systems and irrigation systems.
3. Make preliminary evaluations of soil and ground conditions that will aid in selecting sites for highways and airports and in planning detailed investigations of the sites selected.
4. Locate sources of construction materials.
5. Correlate the performance of engineering structures with soil mapping units to obtain information useful in designing and maintaining the structures.
6. Determine the suitability of the soils for cross-country movement of vehicles and construction equipment.

With the soil map for identification of soil areas, the engineering interpretations reported here can be useful

test data

of the American Association of State Highway Officials (AASHO)]

Mechanical analysis [2]							Liquid limit	Plasticity index	Classification	
Percentage passing sieve—			Percentage smaller than—							
No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.			AASHO [3]	Unified [4]
							Pct.			
100	100	66	49	29	12	8	19	[5] NP	A–4(6)	ML
----------	100	68	55	36	19	14	17	1	A–4(7)	ML
----------	100	68	55	35	20	16	17	1	A–4(7)	ML
100	99	74	56	34	17	11	22	2	A–4(8)	ML
100	100	81	69	53	41	33	30	14	A–6(10)	CL
100	100	78	61	40	30	26	26	10	A–4(8)	CL
100	95	59	49	33	16	9	18	1	A–4(5)	ML
100	98	65	55	41	29	23	22	8	A–4(6)	CL
100	98	61	53	42	30	24	26	9	A–4(5)	CL
100	100	80	54	18	9	6	NP	NP	A–4(8)	ML
100	100	85	66	31	20	17	22	2	A–4(8)	ML
100	100	87	65	31	20	17	23	2	A–4(8)	ML
100	91	33	26	16	8	6	NP	NP	A–2–4(0)	SM
100	91	44	41	35	26	23	24	8	A–4(2)	SC
100	89	45	43	40	34	32	40	18	A–6(4)	SC
100	78	38	36	29	16	10	24	1	A–4(1)	SM
99	73	38	37	32	23	18	22	6	A–4(1)	SM–SC
99	68	23	22	20	15	12	16	3	A–2–4(0)	SM
100	90	22	16	11	7	5	NP	NP	A–2–4(0)	SM
100	99	45	42	40	33	20	30	10	A–4(2)	SC

in diameter is excluded from calculations of grain-size fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes for soil.

[3] Based on AASHO Designation M 145–49.

[4] Based on the Unified Soil Classification System.

[5] Nonplastic.

TABLE 6.—*Estimates of soil*

[The symbol >means more than;

Soil	Depth to seasonal high water table	Depth from surface in typical profile	Classification		
			Dominant USDA Texture	Unified	AASHO
	Ft.	*In.*			
Aycock: AyA, AyB, AyB2	>5	0–14	Very fine sandy loam	ML	A–4
		14–68	Loam to clay loam	CL	A–6
		68–80	Very fine sandy loam	ML, CL	A–4, A–6
Barclay: Ba	1. 5	0–10	Very fine sandy loam	ML	A–4
		10–65	Very fine sandy loam	ML	A–4
Bibb: Bb	[1] 0	0–55	Sandy loam	SM	A–2, A–4
		55–65	Loamy sand, sand	SM	A–2
Chewacla: Ch	[1] 1. 5	0–6	Loam	ML	A–4
		6–50	Loam	CL	A–6
		50–75	Loam and sandy loam	ML, SM	A–4, A–2
Coxville: Co	0	0–9	Loam	ML	A–4
		9–60	Sandy clay loam to sandy clay	CL, SC	A–6, A–7
		60–70	Sandy loam	SC	A–2, A–4
Craven: CrB2, CrC2	2. 5	0–6	Sandy loam	SM	A–2, A–4
		6–32	Clay	CH, CL	A–7
		32–60	Clay loam	CL, CH	A–7, A–6
Dragston: Dr	1. 5	0–12	Loamy sand	SM	A–2
		12–42	Sandy loam	SM, SC	A–2, A–4
		42–75	Sand and loamy sand	SM, SP	A–2
Exum: Ex	2. 5	0–10	Very fine sandy loam	ML	A–4
		10–65	Clay loam to loam	CL, ML	A–6, A–4
		65–70	Loam	CL, ML	A–6, A–4
Goldsboro: Go	2. 5	0–12	Loamy sand	SM	A–2
		12–65	Sandy clay loam	SC, CL	A–6, A–4
		65–76	Sandy loam to sandy clay loam	SM, SC	A–2, A–4, A–6
Johns: Jo	[2] 1. 5	0–14	Sandy loam	SM	A–2, A–4
		14–40	Sandy clay loam to sandy loam.	SC	A–6, A–4, A–2
		40–65	Sand	SP, SM, SP-SM	A–3, A–2
Johnston: Js	([1])	0–28	Loam	ML	A–4
		28–45	Sandy loam	SM, SC	A–2, A–6
		45–65	Sand	SM, SP, SP-SM	A–2, A–3
Kalmia: KaA, KaB, KaD, KaE	[2] <2. 5	0–12	Loamy sand	SM	A–2
		12–40	Sandy clay loam to sandy loam	SC, SM	A–2, A–6, A–4
		40–72	Sand	SP, SM, SP-SM	A–3, A–2
Kenansville: Ke	>5	0–26	Loamy sand	SM	A–2
		26–37	Sandy loam	SM	A–2, A–4
		37–70	Loamy sand to sand	SM, SP, SP-SM	A–2, A–3
Kinston: Kn	([1])	0–12	Loam	ML, CL	A–4, A–6
		12–60	Clay loam	CL, ML	A–6, A–4
		60–72	Sand to gravelly loamy sand	SM	A–2
Lakeland: La	>5	0–100	Sand	SP-SM, SM	A–3
Leaf: Le	([2])	0–9	Loam	ML, CL	A–4, A–6
		9–92	Clay to clay loam	CH, CL	A–7, A–6
		92–110	Sandy loam	SM	A–2, A–4
Leon: Ln	1. 5	0–16	Sand	SP, SP-SM, SM	A–3, A–2
		16–34	Sand (cemented)	SP, SP-SM, SM	A–3, A–2
		34–70	Sand	SP, SM, SP-SM	A–3, A–2
Liddell: Ls	0	0–8	Very fine sandy loam	ML	A–4
		8–54	Very fine sandy loam	ML	A–4
		54–65	Loam	ML	A–4

properties significant in engineering

the symbol <means less than]

Percentage less than 3 inches passing sieve—				Permeability	Available water capacity	Reaction	Shrink-swell potential
No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)				
				In./hr.	*Inches/inch of soil*	*pH*	
100	100	85–100	50–65	2. 0–6. 3	0. 15–0. 17	4. 5–6. 0	Low.
100	100	95–100	60–85	0. 63–2. 0	0. 16–0. 18	4. 5–5. 0	Low to moderate.
100	95–100	85–100	50–65	0. 63–2. 0	0. 16–0. 18	4. 5–5. 0	Low.
100	100	90–100	60–85	0. 63–2. 0	0. 15–0. 17	4. 5–6. 0	Low.
100	100	90–100	65–90	0. 63–2. 0	0. 15–0. 17	4. 5–5. 5	Low.
100	95–100	60–70	30–40	0. 63–2. 0	0. 13–0. 15	5. 1–6. 0	Low.
100	95–100	50–75	0–35	2. 0–6. 3	0. 08–0. 10	5. 1–5. 5	Low.
100	95–100	85–95	60–75	2. 0–6. 3	0. 15–0. 17	4. 5–5. 5	Low.
100	95–100	85–95	60–75	0. 63–2. 0	0. 15–0. 17	4. 5–5. 5	Low.
100	95–100	60–95	30–75	0. 63–2. 0	0. 15–0. 17	4. 5–5. 5	Low.
100	100	85–95	60–75	0. 2–0. 63	0. 15–0. 17	<4. 5–5. 0	Low.
100	100	80–95	45–60	0. 2–0. 63	0. 13–0. 15	<4. 5–5. 0	Moderate.
100	95–100	60–70	30–40	0. 63–2. 0	0. 13–0. 15	4. 5–5. 5	Moderate.
100	100	60–70	30–40	2. 0–6. 3	0. 10–0. 13	5. 1–6. 0	Low.
100	100	90–100	75–95	0. 06–0. 20	0. 13–0. 15	5. 1–5. 5	High.
100	95–100	90–100	70–80	0. 06–0. 20	0. 13–0. 15	5. 1–5. 0	High.
100	100	50–75	15–30	2. 0–6. 3	0. 11–0. 13	4. 5–5. 5	Low.
100	100	60–70	15–40	2. 0–6. 3	0. 13–0. 15	4. 5–5. 0	Low.
100	95–100	50–75	0–30	6. 3–20. 0	0. 06–0. 08	<4. 5	Low.
100	100	85–100	50–65	2. 0–6. 3	0. 15–0. 17	4. 5–6. 0	Low.
100	100	85–100	60–80	0. 63–2. 0	0. 16–0. 18	4. 5–5. 5	Low.
100	100	85–95	50–85	0. 63–2. 0	0. 16–0. 18	4. 5–5. 5	Low.
100	100	50–75	15–30	2. 0–6. 3	0. 10 0. 12	4. 5–6. 0	Low.
100	100	80–90	36–55	0. 63–2. 0	0. 13–0. 15	4. 5–5. 0	Low.
100	95–100	60–90	30–45	0. 63–2. 0	0. 13–0. 15	4. 5–5. 0	Low.
100	100	60–70	30–40	2. 0–6. 3	0. 11–0. 13	<4. 5–5. 5	Low.
100	100	60–90	30–50	0. 63–2. 0	0. 13–0. 15	<4. 5–5. 0	Low.
100	95–100	51–70	0–15	6. 3–20. 0	0. 06–0. 08	<4. 5–5. 0	Low.
100	100	85–95	60–75	2. 0–6. 3	0. 17–0. 19	<4. 5–5. 0	Moderate.
100	95–100	60–70	30–40	2. 0–6. 3	0. 15–0. 17	<4. 5–5. 0	Low.
100	95–100	51–70	0–15	6. 3–20. 0	0. 06–0. 08	4. 5–5. 0	Low.
100	100	50–75	15–30	2. 0–6. 3	0. 08–0. 10	4. 5–6. 0	Low.
100	100	60–90	30–50	0. 63–2. 0	0. 13–0. 15	4. 5–5. 0	Low.
100	95–100	51–70	0–15	6. 3–20. 0	0. 06–0. 08	4. 5–5. 5	Low.
100	100	50–75	15–30	6. 3–20. 0	0. 06–0. 08	4. 5–6. 0	Low.
100	100	60–70	30–40	2. 0–6. 3	0. 11–0. 13	4. 5–5. 5	Low.
100	95–100	51–70	0–30	6. 3–20. 0	0. 06–0. 08	4. 5–5. 5	Low.
100	100	85–95	60–75	2. 0–6. 3	0. 15–0. 17	4. 5–5. 5	Low.
100	100	90–100	60–85	0. 63–2. 0	0. 15–0. 17	4. 5–5. 5	Low.
65–100	65–100	50–70	0–30	2. 0–6. 3	0. 08–0. 10	4. 5–5. 5	Low.
100	95–100	51–70	5–10	6. 3–20. 0	<0. 05	4. 5–5. 5	Low.
100	100	85–95	60–75	0. 63–2. 0	0. 15–0. 17	<4. 5–6. 5	Low.
100	100	90–100	70–95	0. 06–0. 20	0. 14–0. 16	<4. 5–5. 0	High.
100	95–100	60–70	30–40	0. 63–2. 0	0. 10–0. 12	<4. 5–5. 0	Low.
100	100	51–70	0–15	6. 3–20. 0	<0. 05	<4. 5–5. 0	Low.
100	100	51–70	0–15	0. 63–2. 0	0. 06–0. 08	4. 5–5. 0	Low.
100	100	51–70	0–15	6. 3–20. 0	<0. 05	4. 5–5. 0	Low.
100	100	85–100	60–75	2. 0–6. 3	0. 18–0. 20	4. 5–5. 5	Low.
100	100	85–100	60–75	0. 63–2. 0	0. 16–0. 18	4. 5–5. 5	Low.
100	100	85–100	60–75	0. 63–2. 0	0. 16–0. 18	4. 5–5. 5	Low.

TABLE 6.—*Estimates of soil*

Soil	Depth to seasonal high water table	Depth from surface in typical profile	Classification		
			Dominant USDA Texture	Unified	AASHO
	Ft.	*In.*			
Lucy: Lu	>5	0–24	Loamy sand	SM, SP–SM	A–2
		24–70	Sandy clay loam	SC, CL	A–6, A–4
Lumbee: Lv	(2)	0–16	Sandy loam	SM	A–2, A–4
		16–40	Sandy clay loam	SC, CL	A–6, A–4
		40–65	Loamy coarse sand	SM	A–2, A–4
Lynchburg: Ly	1.5	0–11	Sandy loam	SM	A–2, A–4
		11–55	Sandy clay loam	SC, CL	A–6, A–4
		55–72	Sandy loam to sandy clay loam.	SM, SC	A–4, A–6, A–2
Myatt: My	0	0–11	Very fine sandy loam	ML	A–4
		11–64	Clay loam to loam	CL	A–6
		64–70	Clay loam	CL	A–6, A–4
Nahunta: Na	1.5	0–10	Very fine sandy loam	ML	A–4
		10–72	Clay loam to loam	CL	A–4
Nixonton: Nf	2.5	0–10	Very fine sandy loam	ML	A–4
		10–65	Silt loam	ML	A–4
Norfolk: NoA, NoB, NoC, NrB2	>5	0–11	Loamy sand	SM	A–2
		11–75	Sandy clay loam	SC, CL	A–6, A–4
Pamlico: Pa	(1)	0–40	Muck	OH	A–7
		40–60	Loamy sand	SM	A–2
Pantego: Po	0	0–12	Loam	ML	A–4
		12–54	Sandy clay loam	SC, CL	A–6, A–4
		54–65	Sandy loam	SC, SM	A–2, A–6, A–4
Rains: Ra	0	0–13	Sandy loam	SM	A–2, A–4
		13–55	Sandy clay loam	SC, CL	A–6, A–4
		55–78	Sandy loam to sandy clay loam.	SC, SM	A–6, A–4, A–2
Rimini: Rm	2.5	0–54	Sand	SP, SM	A–3, A–2
		54–75	Sand (weakly cemented)	SP, SM	A–3, A–2
Ruston: RuA, RuB, RyB2	>5	0–13	Loamy sand	SM	A–2
		13–72	Sandy clay loam	SC, CL	A–6, A–4
Torhunta: To	(2)	0–9	Loam	ML, SM	A–4
		9–40	Sandy loam	SM, SC, SM–SC	A–2, A–4
		40–80	Sand to loamy sand	SP–SM, SM	A–2, A–3
Troup: Tr	>5	0–49	Sand	SP, SP–SM, SM	A–3, A–2
		49–110	Sandy clay loam to sandy loam.	SC, CL, SM	A–6, A–4, A–2
Wagram: WaB, WaC, WaD	>5	0–28	Loamy sand	SM, SP–SM	A–2
		28–68	Sandy clay loam	SC, CL	A–6, A–4
		68–86	Sandy clay loam to loamy sand.	SC, SM	A–6, A–4
Weston: We	0	0–13	Loamy sand	SM	A–2
		13–55	Sandy loam	SM, SC	A–2, A–4
		55–65	Loamy sand	SM	A–2
Wickham: WhA, WhB, WkB2	[2] >5	0–14	Loamy sand	SM	A–2
		14–50	Clay loam to sandy loam	SC, CL	A–6, A–4, A–2
		50–65	Coarse sand to gravelly sand	SP, SM, GM, GC	A–3, A–2

[1] Flooded at least once every year.

properties significant in engineering—Continued

Percentage less than 3 inches passing sieve—				Permeability	Available water capacity	Reaction	Shrink-swell potential
No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)				
				In./hr.	*Inches/inch of soil*	*pH*	
100	100	50–75	5–20	6. 3–20. 0	0. 08–0. 10	4. 5–6. 5	Low.
100	100	80–90	36–55	0. 63–2. 0	0. 12–0. 14	4. 5–5. 0	Low.
100	100	60–70	30–40	2. 0–6. 3	0. 10–0. 12	<4. 5–5. 5	Low.
100	100	80–90	36–55	0. 63–2. 0	0. 13–0. 15	<4. 5	Low.
100	95–100	50–75	15–40	6. 3–20. 0	0. 06–0. 08	<4. 5	Low.
100	100	60–70	30–40	2. 0–6. 3	0. 10–0. 12	4. 5–6. 0	Low.
100	100	80–90	36–55	0. 63–2. 0	0. 13–0. 15	4. 5–5. 0	Low.
100	95–100	60–90	30–45	0. 63–2. 0	0. 13–0. 15	<4. 5–5. 0	Low.
100	100	85–100	60–85	2. 0–6. 3	0. 15–0. 17	4. 5–6. 0	Low.
100	100	85–100	60–85	0. 2–0. 63	0. 14–0. 16	4. 5–5. 0	Low.
100	100	90–100	70–85	0. 2–0. 63	0. 14–0. 16	4. 5–5. 0	Low.
100	100	85–95	50–65	2. 0–6. 3	0. 15–0. 17	4. 5–6. 0	Low.
100	100	85–100	60–80	0. 63–2. 0	0. 15–0. 17	4. 5–5. 5	Low.
100	100	85–100	60–90	2. 0–6. 3	0. 17–0. 19	4. 5–6. 0	Low.
100	100	90–100	60–90	0. 63–2. 0	0. 16–0. 18	4. 5–5. 0	Low.
100	100	50–95	15–35	2. 0–6. 3	0. 10–0. 12	4. 5–6. 0	Low.
100	100	80–95	36–55	0. 63–2. 0	0. 13–0. 15	4. 5–5. 5	Low.
100	100	80–100	50–75	0. 63–2. 0	0. 17–0. 19	<4. 5	High.
100	95–100	50–75	15–30	2. 0–6. 3	0. 07–0. 09	<4. 5	Low.
100	100	85–95	60–75	2. 0–6. 3	0. 15–0. 17	<4. 5–5. 5	Low.
100	100	80–90	36–55	0. 63–2. 0	0. 13–0. 15	<4. 5–5. 0	Low.
100	95–100	60–70	30–40	0. 63–2. 0	0. 10–0. 12	<4. 5–5. 0	Low.
100	100	60–70	30–40	2. 0–6. 3	0. 11–0. 13	4. 5–5. 5	Low.
100	100	80–90	36–60	0. 63–2. 0	0. 13–0. 15	4. 5–5. 0	Low.
100	95–100	60–90	30–45	0. 63–2. 0	0. 11–0. 13	<4. 5	Low.
100	100	51–70	0–15	6. 3–20. 0	0. 03–0. 05	4. 5–5. 5	Very low.
100	95–100	51–70	0–15	0. 63–2. 0	0. 03–0. 05	4. 5–5. 5	Very low.
100	100	50–75	15–30	2. 0–6. 3	0. 10–0. 12	4. 5–6. 0	Low.
100	100	80–90	36–55	0. 63–2. 0	0. 15–0. 17	4. 5–5. 0	Low.
100	100	75–95	36–75	2. 0–6. 3	0. 11–0. 13	<4. 5–5. 5	Low.
100	95–100	60–75	30–40	2. 0–6. 3	0. 13–0. 15	<4. 5–5. 0	Low.
100	95–100	51–70	5–25	2. 0–6. 3	0. 06–0. 08	<4. 5–5. 0	Low.
100	100	60–70	0–15	6. 3–20. 0	0. 03–0. 05	4. 5–5. 5	Low.
100	100	80–90	30–55	2. 0–6. 3	0. 11–0. 13	4. 5–5. 0	Low.
100	100	50–75	5–20	6. 3–20. 0	0. 07–0. 09	4. 5–6. 0	Low.
100	100	80–90	36–55	2. 0–6. 3	0. 14–0. 16	4. 5–5. 0	Low.
100	95–100	50–90	15–45	2. 0–6. 3	0. 11–0. 13	4. 5–5. 0	Low.
100	100	50–75	15–30	2. 0–6. 3	0. 11–0. 13	4. 5–5. 5	Low.
100	100	60–70	30–40	0. 63–2. 0	0. 13–0. 15	4. 5–5. 0	Low.
100	95–100	50–75	15–30	2. 0–6. 3	0. 08–0. 10	<4. 5	Low.
100	100	50–90	15–30	2. 0–6. 3	0. 11–0. 13	5. 1–6. 0	Low.
100	100	60–100	30–80	0. 63–2. 0	0. 13–0. 15	5. 1–6. 0	Low.
60–100	55–100	51–70	0–25	6. 3–20. 0	0. 06–0. 08	5. 1–6. 0	Low.

[2] Flooded once in 5 to 20 years.

TABLE 7.—*Interpretations of*

Soil series and map symbols	Suitability as source of—		Degree of limitation for—	
	Topsoil	Road fill	Dwellings	Septic tank filter fields
Aycock: AyA, AyB, AyB2	Good	Fair: medium traffic supporting capacity.	Slight to moderate: low to moderate shrink-swell potential.	Moderate: moderate permeability.
Barclay: Ba	Fair: seasonal high water table.	Fair: seasonal high water table; medium traffic supporting capacity.	Severe: seasonal high water table.	Severe: seasonal high water table.
Bibb: Bb	Poor: seasonal high water table.	Poor: seasonal high water table; very frequent flooding.	Severe: frequent flooding; seasonal high water table.	Severe: seasonal high water table; very frequent flooding.
Chewacla: Ch	Fair: seasonal high water table.	Fair: seasonal high water table; very frequent flooding; medium traffic supporting capacity.	Severe: seasonal high water table; very frequent flooding.	Severe: seasonal high water table; very frequent flooding.
Coxville: Co	Poor: seasonal high water table.	Poor: seasonal high water table; moderate shrink-swell potential.	Severe: seasonal high water table; ponding in low places.	Severe: seasonal high water table; moderately slow permeability.
Craven: CrB2, CrC2	Poor: limited material.	Poor: high shrink-swell potential; low traffic supporting capacity.	Severe: high shrink-swell potential.	Severe: slow permeability.
Dragston: Dr	Fair: seasonal high water table.	Fair: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.
Exum: Ex	Fair: seasonal high water table.	Fair: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.
Goldsboro: Go	Fair: seasonal high water table.	Fair: seasonal high water table; medium traffic supporting capacity.	Moderate: seasonal high water table.	Moderate: seasonal high water table.
Johns: Jo	Fair: seasonal high water table.	Fair: seasonal high water table.	Severe: seasonal high water table; infrequent flooding.	Severe: seasonal high water table; infrequent flooding.

engineering properties of soils

Degree of limitation for—Continued			Soil features affecting—		
Campsites	Recreation picnic areas	Intensive play areas	Highway location	Sprinkler irrigation	Agricultural drainage
Slight	Slight	Slight on slopes of 0 to 2 percent; moderate on slopes of 2 to 6 percent.	Generally favorable features.	Slope; moderately slow infiltration rate on eroded phase.	Well drained.
Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Seasonal high water table.	Seasonal high water table.	Moderate permeability; seasonal high water table.
Severe: very frequent flooding; seasonal high water table.	Severe: very frequent flooding; seasonal high water table.	Severe: very frequent flooding; seasonal high water table.	Very frequent flooding; ponded areas below available outlets; seasonal high water table.	Seasonal high water table; very frequent flooding.	Very frequent flooding; moderate permeability; seasonal high water table; poor outlets.
Severe: seasonal high water table; very frequent flooding.	Severe: seasonal high water table; very frequent flooding.	Severe: seasonal high water table; very frequent flooding.	Seasonal high water table; ponded areas below available outlets; very frequent flooding.	Seasonal high water table; very frequent flooding.	Seasonal high water table; very frequent flooding; moderate permeability.
Severe: seasonal high water table; ponding in low places.	Severe: seasonal high water table; ponding in low places.	Severe: seasonal high water table; ponding in low places.	Seasonal high water table; moderately shrink-swell potential; plastic material.	Seasonal moderately slow permeability; high water table.	Moderately slow permeability; seasonal high water table.
Moderate: trafficability fair.	Moderate: trafficability fair.	Moderate: slopes 2 to 6 percent; trafficability fair. Severe: slopes 6 to 10 percent.	Unstable cut slopes; high shrink-swell potential; very plastic material.	Moderately slow infiltration rate; slow permeability; slope.	Slow permeability; seasonal high water table.
Severe: seasonal high water table.	Severe: seasonal high water table; trafficability poor.	Severe: seasonal high water table; trafficability poor.	Seasonal high water table.	Seasonal high water table; moderately rapid permeability.	Seasonal high water table; moderately rapid permeability; unstable sand below about 42 inches.
Slight	Slight	Slight	Seasonal high water table.	Seasonal high water table.	Seasonal high water table; moderate permeability.
Slight	Slight	Slight	Seasonal high water table.	Seasonal high water table.	Seasonal high water table; moderate permeability.
Severe: seasonal high water table.	Severe: seasonal high water table; trafficability poor; infrequent flooding.	Severe: seasonal high water table; trafficability poor; infrequent flooding.	Seasonal high water table; infrequent flooding.	Seasonal high water table.	Seasonal high water table; moderate permeability; unstable sand below about 40 inches.

TABLE 7.—*Interpretations of*

Soil series and map symbols	Suitability as source of—		Degree of limitation for—	
	Topsoil	Road fill	Dwellings	Septic tank filter fields
Johnston: Js	Poor: seasonal high water table.	Poor: seasonal high water table; very frequent flooding.	Severe: seasonal high water table; very frequent flooding.	Severe: seasonal high water table; very frequent flooding.
Kalmia: KaA, KaB, KaD, KaE	Fair: sandy texture; limited quantity of suitable material.	Good	Slight: slopes of 0 to 6 percent; severe where subject to flooding. Moderate: slopes of 10 to 15 percent. Severe: slopes of more than 15 percent.	Slight: slopes of 0 to 6 percent; severe where subject to flooding. Moderate: slopes of 10 to 15 percent. Severe: slopes of more than 15 percent.
Kenansville: Ke	Poor: sandy texture; very low fertility.	Good	Slight	Slight
Kinston: Kn	Poor: seasonal high water table.	Poor: very frequent flooding; seasonal high water table.	Severe: very frequent flooding; seasonal high water table.	Severe: very frequent flooding; seasonal high water table.
Lakeland: La	Poor: sandy texture; very low fertility.	Good if soil binder is added.	Slight	Slight to severe: low filtering action; possible contamination of water supplies.
Leaf: Le	Poor: seasonal high water table.	Poor: seasonal high water table; high shrink-swell potential; low traffic supporting capacity.	Severe: seasonal high water table; high shrink-swell potential; infrequent flooding.	Severe: seasonal high water table; slow permeability; infrequent flooding.
Leon: Ln	Poor: sandy texture; very low fertility; seasonal high water table.	Fair: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table; low filtering action.
Liddell: Ls	Poor: seasonal high water table.	Poor: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.
Lucy: Lu	Poor: sandy texture; low to very low fertility.	Good to Fair: high to medium traffic supporting capacity.	Slight	Slight

engineering properties of soils—Continued

Degree of limitation for—Continued			Soil features affecting—		
Camp sites	Recreation picnic areas	Intensive play areas	Highway location	Sprinkler irrigation	Agricultural drainage
Severe: seasonal high water table; very frequent flooding.	Severe: seasonal high water table; very frequent flooding; trafficability poor.	Severe: seasonal high water table; very frequent flooding; trafficability poor.	Seasonal high water table; very frequent flooding; ponded areas below outlets; high organic content.	Seasonal high water table; very frequent flooding; moderately rapid permeability.	Seasonal high water table; moderately rapid permeability; very frequent flooding; poor availability of outlets.
Slight: slopes of 0 to 6 percent; severe where subject to flooding. Moderate: slopes of 10 to 15 percent. Severe: slopes of more than 15 percent.	Slight: slopes of 0 to 6 percent; severe where subject to flooding. Moderate: slopes of 10 to 15 percent. Severe: slopes of more than 15 percent.	Slight: slopes of 0 to 2 percent; severe where subject to flooding. Moderate: slopes of 2 to 6 percent. Severe: slopes of more than 10 percent.	Infrequent flooding.	Features generally favorable except slope.	Well drained.
Slight	Slight	Moderate: trafficability fair.	Features generally favorable.	Low available water capacity; moderately rapid permeability.	Well drained.
Severe: very frequent flooding; seasonal high water table.	Severe: very frequent flooding; seasonal high water table.	Severe: very frequent flooding; seasonal high water table.	Very frequent flooding; seasonal high water table; ponded areas below outlets.	Very frequent flooding; seasonal high water table.	Very frequent flooding; seasonal high water table; moderate permeability; poor availability of outlets.
Moderate: trafficability poor; susceptible to soil blowing.	Moderate: trafficability poor; susceptible to soil blowing.	Severe: trafficability poor; susceptible to soil blowing.	Difficult to load and haul.	Rapid infiltration rate; very low available water capacity; susceptible to soil blowing; rapid permeability.	Excessively drained.
Severe: seasonal high water table; ponding in low places; infrequent flooding.	Severe: seasonal high water table; ponding in low places; infrequent flooding.	Severe: seasonal high water table; ponding in low places; infrequent flooding.	Seasonal high water table; very plastic; high shrink-swell potential; infrequent flooding.	Seasonal high water table; slow permeability.	Slow permeability; seasonal high water table.
Severe: trafficability poor; seasonal high water table.	Severe: trafficability poor; seasonal high water table.	Severe: trafficability poor; seasonal high water table.	Seasonal high water table; difficult to load and haul.	Rapid infiltration rate; low available water capacity; seasonal high water table.	Seasonal high water table; weakly cemented subsoil; moderate permeability.
Severe: seasonal high water table; ponding in low places.	Severe: seasonal high water table; ponding in low places.	Severe: seasonal high water table; ponding in low places.	Seasonal high water table.	Seasonal high water table.	Moderate permeability; seasonal high water table.
Moderate: susceptible to soil blowing; trafficability poor.	Moderate: susceptible to soil blowing; trafficability poor.	Severe: susceptible to soil blowing; trafficability poor.	Features generally favorable.	Low available water capacity; susceptible to soil blowing; rapid infiltration rate.	Well drained.

TABLE 7.—*Interpretations of*

Soil series and map symbols	Suitability as source of—		Degree of limitation for—	
	Topsoil	Road fill	Dwellings	Septic tank filter fields
Lumbee: Lv	Poor: seasonal high water table.	Poor: seasonal high water table.	Severe: seasonal high water table; infrequent flooding.	Severe: seasonal high water table; infrequent flooding.
Lynchburg: Ly	Fair: seasonal high water table.	Fair: seasonal high water table; medium traffic supporting capacity.	Severe: seasonal high water table.	Severe: seasonal high water table.
Myatt: My	Poor: seasonal high water table.	Poor: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.
Nahunta: Na	Fair: seasonal high water table.	Fair: seasonal high water table; medium traffic-supporting capacity.	Severe: seasonal high water table.	Severe: seasonal high water table.
Nixonton: Nf	Fair: seasonal high water table.	Fair: seasonal high water table; medium traffic-supporting capacity.	Moderate: seasonal high water table.	Moderate: seasonal high water table.
Norfolk: NoA, NoB, NoC, NrB2	Fair: sandy texture; limited quantity of suitable material.	Fair to good: medium to high traffic-supporting capacity.	Slight: slopes 0 to 6 percent. Moderate: slopes 6 to 10 percent.	Slight: slopes 0 to 6 percent. Moderate: slopes 6 to 10 percent.
Pamlico: Pa	Poor: seasonal high water table; good as amendment.	Poor: seasonal high water table; very frequent flooding; high shrink-swell potential.	Severe: seasonal high water table; very frequent flooding; high shrink-swell potential.	Severe: seasonal high water table; very frequent flooding.
Pantego: Po	Poor: seasonal high water table.	Poor: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.
Rains: Ra	Poor: seasonal high water table.	Poor: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.

engineering properties of soils—Continued

Degree of limitation for—Continued			Soil features affecting—		
Camp sites	Recreation picnic areas	Intensive play areas	Highway location	Sprinkler irrigation	Agricultural drainage
Severe: seasonal high water table; ponding in low places; infrequent flooding.	Severe: seasonal high water table; ponding in low places.	Severe: seasonal high water table; ponding in low places.	Seasonal high water table; infrequent flooding.	Seasonal high water table.	Moderate permeability; unstable sand below about 40 inches; seasonal high water table; poor availability of outlets.
Severe: seasonal high water table.	Moderate: seasonal high water table.	Severe: seasonal high water table.	Seasonal high water table.	Seasonal high water table.	Moderate permeability; seasonal high water table.
Severe: seasonal high water table; ponding in low places.	Severe: seasonal high water table; ponding in low places.	Severe: seasonal high water table; ponding in low places.	Seasonal high water table.	Seasonal high water table; moderately slow permeability.	Moderately slow permeability; seasonal high water table.
Severe: seasonal high water table.	Moderate: seasonal high water table.	Severe: seasonal high water table.	Seasonal high water table.	Seasonal high water table.	Moderate permeability; seasonal high water table.
Slight	Slight	Slight	Seasonal high water table.	Seasonal high water table.	Moderate permeability; seasonal high water table.
Slight: slopes 0 to 6 percent. Moderate: slopes 6 to 10 percent.	Slight: slopes 0 to 6 percent. Moderate: slopes 6 to 10 percent.	Slight: slopes 0 to 2 percent. Moderate: slopes 2 to 6 percent. Severe: slopes more than 6 percent.	Features generally favorable.	Slopes; moderately slow infiltration rate in eroded areas.	Well drained.
Severe: seasonal high water table; very frequent flooding.	Severe: seasonal high water table; very frequent flooding.	Severe: seasonal high water table; very frequent flooding.	Very frequent flooding; seasonal high water table; ponded areas below available outlets; high organic content.	Seasonal high water table; very frequent flooding.	Subject to very frequent flooding; seasonal high water table; moderate permeability; unstable sand below about 40 inches.
Severe: seasonal high water table; ponding in low places.	Severe: seasonal high water table; ponding in low places.	Severe: seasonal high water table; ponding in low places.	Seasonal high water table.	Seasonal high water table.	Moderate permeability; seasonal high water table.
Severe: seasonal high water table; ponding in low places.	Severe: seasonal high water table; ponding in low places.	Severe: seasonal high water table; ponding in low places.	Seasonal high water table.	Seasonal high water table.	Moderate permeability; seasonal high water table.

TABLE 7—*Interpretations of*

Soil series and map symbols	Suitability as source of—		Degree of limitation for—	
	Topsoil	Road fill	Dwellings	Septic tank filter fields
Rimini: Rm	Poor: sandy texture; very low fertility.	Good if soil binder is added.	Slight	Slight to severe: low filtering action; possible contamination of water supplies.
Ruston: RuA, RuB, RyB2	Fair: sandy texture; limited quantity of suitable material.	Fair to good: medium to high traffic supporting capacity.	Slight	Slight
Torhunta: To	Poor: seasonal high water table.	Poor: seasonal high water table.	Severe: seasonal high water table; infrequent flooding.	Severe: seasonal high water table; infrequent flooding.
Troup: Tr	Poor: sandy texture; very low fertility.	Good if soil binder is added.	Slight	Slight
Wagram: WaB, WaC, WaD	Poor: sandy texture; low to very low fertility.	Good to fair: high to medium traffic supporting capacity.	Slight: slopes 0 to 6 percent. Moderate: slopes 6 to 15 percent.	Slight: slopes 0 to 6 percent. Moderate: slopes 6 to 15 percent.
Weston: We	Poor: seasonal high water table.	Poor: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.
Wickham: WhA, WhB, WkB2	Fair: sandy texture; limited quantity of suitable material.	Fair to good: medium to high traffic supporting capacity.	Slight: severe where subject to floods.	Moderate: moderate permeability; severe where subject to floods.

for many purposes. It should be emphasized, however, that these interpretations will not eliminate the need for sampling and testing at the site of specific engineering works. Even in these situations, the soil map is useful for planning more detailed field investigations and for suggesting the kinds of problems that may be expected. Because of the mapping scale used, small areas of other soils are included in the mapping units.

Some of the terms used by the soil scientist are different from terms and classifications used by the engineer. For example, clay, silt, and sand have a different meaning in soil science. These terms are defined in the Glossary.

Engineering classification

The two systems most commonly used in classifying soils for engineering are the systems approved by the American Association of State Highway Officials (AASHO) and the Unified Soil Classification System.

The AASHO system (*1*) is used to classify soils according to those properties that affect use in highway construction. In this system all soil material is classified in seven principal groups. The groups range from A–1, which consists of soils that have the highest bearing strength and are the highest quality soils for subgrade, to A–7, which consists of soils that have the lowest bearing strength when wet. Within each group, the relative engineering value of the soil material is indicated by a group index number. The numbers range from 0 for the best material to 20 for the poorest. The group index number is shown in parentheses following the soil group system (see table 5).

In the Unified system (*10*) soils are classified according to their texture and plasticity and their performance as engineering construction material. Soils are grouped in 15 classes. There are eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. GP and GW are clean gravels, and GM and GC are gravels that include, respectively, an appreciable amount of nonplastic and plastic fines. SP and SW are clean sands. SM and SC are sands that include fines of silt and clay. ML and CL are silts and clays that have a low liquid limit, and MH and CH are silts and clays that have a high liquid limit. Soils on the borderline between two classes are designated by symbols for both classes, for example, ML-CL.

Soil scientists use the USDA textural classification (*7*). In this, the texture of the soil is determined according to the proportion of soil particles smaller than 2 millimeters in diameter, that is, the proportion of sand, silt, and clay. Textural modifiers, such as gravelly, stony, shaly, and cobbly, are used as needed.

Table 5 shows the AASHO and Unified classification of specified soils in the county as determined by laboratory tests. Table 6 shows the estimated classification of all the soils in the county according to all three systems of classification.

Engineering test data

Samples of 7 soils were tested by the North Carolina State Highway Commission so that the soils could be evaluated for engineering purposes. For the soil series not tested, classification was estimated from descriptions of soil profiles written by the soil scientists. The test data are given in table 5. The test data indicate the characteristics of the soil at the specified location. The physical characteristics of similar soils at other locations may vary from those of the soil sampled. All samples were obtained at a depth of less than 7 feet.

The engineering classifications in table 5 are based on data obtained by mechanical analyses and by tests made to determine liquid limits and plastic limits. Mechanical analyses were made by combined sieve and hydrometer methods.

The tests to determine plastic limit and liquid limit measure the effect of water on the consistency of the soil material. As the moisture content of a clayey soil increases from a dry state, the material changes from a semisolid to a plastic state. As the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the material passes from a semisolid to a plastic state. The liquid limit is the moisture content at which the material passes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. The plasticity index indicates the range of moisture content within which soil material is in a plastic condition.

Estimated properties of the soils

Table 6 gives some of the significant characteristics of the soils of the county. It also gives the engineering classification of the principal horizons of typical profiles.

The depth to the seasonal high water table is based on field observations. Depths below 5 feet cannot be estimated satisfactorily. Depth to bedrock is not a significant factor in this county.

The soil material in the main horizons is classified according to USDA textural terms. Except for the soils listed in table 5, for which engineering test data are available, the classifications shown for the Unified and AASHO systems are estimates based on the USDA classification of texture and the descriptions of the soils.

Estimates of the percentage less than 3 inches passing sieve sizes 4, 10, 40, and 200 are shown. Coarse fragments greater than 3 inches were not encountered.

The estimated permeability rates are for soil material in its natural state. They are based on field observations and limited laboratory data.

Available water capacity refers to the water in the soil that is available to plants. It is the amount of water held in the soil between field capacity and the permanent wilting point; that is, between one-third atmosphere and 15 atmospheres of tension. The ratings are based on laboratory tests of a limited number of soils. For soils not tested, estimates are based on ratings for similar soils.

Reaction, or the degree of acidity or alkalinity, is given in terms of pH values.

Shrink-swell potential indicates the expected change in volume when the moisture content changes. It is estimated primarily on the basis of the amount and type of clay in a soil. In general, soils classified as CH and A–7 have a high shrink-swell potential. Sandy soils have a low or very low shrink-swell potential.

Climate

The climate of Wayne County is warm and humid. Summers are long and hot, and winters are short and mild. The climate is fairly even throughout the county and has caused few differences among the soils.

The mild, humid climate favors rapid decomposition of organic matter and hastens chemical reaction in the soil. The abundant rainfall leaches out large amounts of soluble bases and carries the less soluble finer particles downward. As a result, all the soils in the county are acid in reaction and strongly leached.

Plant and animal life

The plants and animals that live on and in the soil influence soil development and many soil characteristics. They determine the kinds of organic matter and the way in which it is incorporated with the soil. They transfer nutrient elements from one horizon to another and, in many places, transport soil material from one horizon to another. Plants and animals also affect the gains and losses of organic matter, gains and losses of nitrogen and other plant nutrients, soil structure, porosity, and certain other soil characteristics.

Pine forests originally covered most of the upland in Wayne County. Cypress, gum, and hardwoods were dominant in the very wet areas and swamp. As fallen leaves, twigs, roots, and whole plants decay, plant nutrients and organic acids are released to percolate down through the soil. Roots take up some of the nutrients. Organic acids slowly dissolve soluble soil materials and increase the rate of leaching of inorganic material. The effect of these organic acids on soil formation is conditioned by climate, which modifies the rate of chemical reaction and of leaching and to a large degree determines the kinds of plants and animals that can live in and on the soil.

Organic matter decays more rapidly on the well-drained soils, such as Norfolk, Ruston, and Aycock soils, and very little accumulates in the surface layer. Decay is slower on wet soils, such as Pamlico, Pantego, and Johnston soils, because oxidation of organic matter is retarded by excess moisture. Therefore, the organic-matter content in the surface layer of wet soils is much higher than in well-drained soils.

Relief

Relief is largely determined by dissection of the landscape by rivers and streams and through slope retreat. It influences soil formation through its effect on drainage, erosion, temperature, and plant cover. The influence of topography is modified by the other factors of soil formation.

In Wayne County slopes range from 0 to about 25 percent. Ruston, Aycock, Norfolk, and other upland soils on smoother slopes have a deep solum. On the more sloping upland areas that break sharply to the draws, geological erosion is more rapid, and as a result some of the soils, such as Kalmia and Craven soils, have a thin solum.

Relief largely determines the natural drainage of a soil. For example, the very poorly drained Johnston soils are nearly level soils of the flood plain.

Time

The length of time the other factors of soil formation have acted on the soil material has determined some of the differences in the soils of Wayne County. The soils vary considerably in age. The smooth, nearly level parts of the upland are relatively stable. Norfolk, Goldsboro, Aycock, and other soils on these parts of the upland have well-defined horizons. Bibb, Johnston, Chewacla, and other soils that formed in recent alluvium have not been in place long enough for well-defined horizons to develop.

Classification of the Soils

Classification consists of an orderly grouping of soils according to a system designed so that soil characteristics and interrelationships are more easily remembered. Classification is useful in organizing and applying the results of experience and research. Soils are placed in narrow classes for discussion in detailed soil surveys and for application of knowledge within farms and fields. The many thousands of narrow classes are then grouped into progressively fewer and broader classes in successively higher categories, so that information can be applied to large geographic areas.

Two systems of classifying soils have been used in the United States in recent years. The older system was adopted in 1938 (*2*) and revised later (*6*). The system currently used by the National Cooperative Soil Survey was developed in the early sixties (*5*) and was adopted in 1965 (*8*). It is under continual study.

The current system of classification has six categories. Beginning with the most inclusive, these categories are the order, the suborder, the great group, the subgroup, the family, and the series. The criteria for classification are soil properties that are observable or measurable, but the properties are selected so that soils of similar genesis are grouped together. The placement of some soil series in the current system of classification, particularly in families, can change as more precise information becomes available.

Table 8 shows the classification of each soil series of the County by family, subgroup, and order, according to the current system.

General Nature of the County

This section gives general facts about Wayne County. It briefly discusses physiography, relief, drainage, water supply, climate, settlement and development, transportation, and industry.

Physiography, Relief, and Drainage

Wayne County is in the Coastal Plain physiographic province. Except in five small areas of bedrock, the soils are underlain by unconsolidated layers of sand, silt, and clay. Interstream areas are broad and flat but are rounded near the drainageways.

The county slopes very gently eastward. Relief is pronounced only near stream valleys. The terrain along the Neuse River varies from flat areas near Goldsboro that are susceptible to flooding, to elevated areas at Cliffs of the

TABLE 8.—*Soil series classified according to the current system*

Series	Family	Subgroup	Order
Aycock	Fine-silty, siliceous, thermic	Typic Paleudults	Ultisols.
Barclay [1]	Coarse-silty, mixed, thermic	Aquic Dystrochrepts	Inceptisols.
Bibb	Coarse-loamy, siliceous, acid, thermic	Typic Fluvaquents	Entisols.
Chewacla	Fine-loamy, mixed, thermic	Fluraquentic Dystrochrepts	Inceptisols.
Coxville	Clayey, kaolinitic, thermic	Typic Paleaquults	Ultisols.
Craven	Clayey, mixed, thermic	Aquic Hapludults	Ultisols.
Dragston	Coarse-loamy, siliceous, thermic	Aquic Hapludults	Ultisols.
Exum	Fine-silty, siliceous, thermic	Aquic Paleudults	Ultisols.
Goldsboro	Fine-loamy, siliceous, thermic	Aquic Paleudults	Ultisols.
Johns	Fine-loamy, siliceous, thermic	Aquic Hapludults	Ultisols.
Johnston	Coarse-loamy, siliceous, acid, thermic	Cumulic Humaquepts	Inceptisols.
Kalmia	Fine-loamy, siliceous, thermic	Typic Hapludults	Ultisols.
Kenansville	Loamy, siliceous, thermic	Arenic Hapludults	Ultisols.
Kinston	Fine-loamy, siliceous, nonacid, thermic	Typic Fluvaquents	Entisols.
Lakeland	Siliceous, thermic, coated	Typic Quartzipsamments	Entisols.
Leaf	Clayey, mixed, thermic	Typic Albaquults	Ultisols.
Leon	Sandy, siliceous, thermic	Aeric Haplaquods	Spodosols.
Liddell	Coarse-silty, siliceous, acid, thermic	Typic Haplaquepts	Inceptisols.
Lucy	Loamy, siliceous, thermic	Arenic Paleudults	Ultisols.
Lumbee	Fine-loamy, siliceous, thermic	Typic Ochraquults	Ultisols.
Lynchburg	Fine-loamy, siliceous, thermic	Aeric Paleaquults	Ultisols.
Myatt	Fine-loamy, siliceous, thermic	Typic Ochraquults	Ultisols.
Nahunta	Fine-silty, siliceous, thermic	Aeric Paleaquults	Ultisols.
Nixonton [2]	Coarse-silty, mixed, thermic	Typic Dystrochrepts	Inceptisols.
Norfolk	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Pamlico	Sandy, siliceous, dysic, thermic	Terric Medisaprists	Histosols.
Pantego	Fine-loamy, siliceous, thermic	Umbric Paleaquults	Ultisols.
Rains	Fine-loamy, siliceous, thermic	Typic Paleaquults	Ultisols.
Rimini	Sandy, siliceous, thermic	Entic Haplohumods	Spodosols.
Ruston	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Torhunta	Coarse-loamy, siliceous, acid, thermic	Typic Humaquepts	Inceptisols.
Troup	Loamy, siliceous, thermic	Grossarenic Paleudults	Ultisols.
Wagram	Loamy, siliceous, thermic	Arenic Paleudults	Ultisols.
Weston	Coarse-loamy, siliceous, thermic	Typic Ochraquults	Ultisols.
Wickham	Fine-loamy, mixed, thermic	Typic Hapludults	Ultisols.

[1] Barclay soils in this county are taxadjuncts to the Barclay series because they have a siliceous mineralogy.
[2] Nixonton soils in this county are taxadjuncts to the Nixonton series because thay have a siliceous mineralogy.

Neuse that are as much as 100 feet above the level of the river.

The Neuse River divides the county very irregularly and drains about 90 percent of the county. Drainageways of the Cape Fear River drain the rest. Runoff is slow on the smooth, broad, nearly level divides and on the heavily vegetated, nearly level flood plains.

Water Supply

Municipal and domestic water is obtained from wells. Goldsboro's supply, however, is from the Little River. Nearly all wells are in Coastal Plain sediments. Basement rock, chiefly slate, underlies the sediments and is infrequently tapped as a source of water supply.

Ground water is plentiful throughout the county and is near the surface in most areas (*3*). It is easily tapped for household and farm uses. Many farms have excavated ponds less than 15 feet deep that supply water for livestock, irrigation, and recreation.

Climate [6]

The climate of Wayne County is influenced mainly by latitude, elevation, and distance from the ocean. Most of the county is nearly level, and data from Goldsboro are representative of the climate throughout the county.

Table 9 gives facts about temperature and precipitation in Wayne County. The data were obtained from the Goldsboro area or were estimated.

The average length of the freeze-free growing season is about 225 days, lasting from late in March until early in November (see table 10). In nearly 75 years of record, the lowest temperature recorded at Goldsboro was 0° F. The highest temperature of record is 108° F. The temperature reaches 100° at least once in about half the summers, and 90° or higher on more than half the days of the typical summer season.

During the growing season rain falls mainly during thunderstorms and is therefore likely to vary widely from year to year, season to season, month to month, and place to place over the county. Some areas are without measureable rain for periods of 5 to 20 days and require irrigation for crops. Frequently in autumn and occasionally in summer, rainfall is increased by the passage of a tropical storm along the coast or inland.

Rainfall in winter usually results from low-pressure storm fronts, and is less variable than in summer. Several days may pass without significant rain, but this is less important in winter because of slower evaporation and transpiration.

[6] By A. V. HARDY, climatologist for North Carolina, National Weather Service, U.S. Department of Commerce.

The town of Waynesboro, situated on the banks of the Neuse River, was incorporated as the county seat in 1787. In 1839, the Wilmington and Weldon Railroad established a line through the middle of the county. Goldsboro became the transportation center and was made the county seat in 1848.

By 1850, the cultivation of cotton had become widespread and turpentine stills were common. The numbers of cotton gins, sawmills, and gristmills increased slowly.

Free schools were established, and illiteracy was reduced considerably. Led by Charles B. Aycock, Wayne County was one of the first to establish a public school system.

In 1856, the North Carolina Railroad was constructed from Goldsboro to Charlotte via Greensboro, making Wayne County a railroad center for the eastern part of North Carolina. This was particularly important because the Neuse River, regarded by early settlers as a potential waterway, was unsuitable for transportation.

In the 1870's, tobacco and truck farming began to compete with corn and cotton. Tobacco markets were soon established, as were textile and other small industries.

The population of Wayne County was 64,267 in 1950 and 82,059 in 1960. The U.S. Air Force reactivated Seymour Johnson Field in 1955. This, coupled with industrial growth, accounts for the large increase in population between 1950 and 1960.

Transportation and Industry

The county has railroad service, airport facilities, and highways. There are about 90 diversified manufacturing plants in Wayne County. Thirty-two produce food products, 14 produce lumber, wood, and furniture products, and 12 are metal-working firms. Tobacco stemming and redrying is an important industry during the tobacco season. Other industries include electrical equipment manufacturers, textile mills, apparel plants, chemical firms, building product firms, and a leather and chamois plant.

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Glossary

Available water capacity (also termed available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistence is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Drainage class (natural). Refers to the conditions of frequency and duration of periods of saturation or partial saturation that existed during the development of the soil, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven different classes of natural soil drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have a low water-holding capacity.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Well-drained soils are nearly free from mottling and are commonly of intermediate texture.

Moderately well drained soils commonly have a slowly permeable layer in or immediately beneath the solum. They have uniform color in the A and upper B horizons and have mottling in the lower B and the C horizons.

Somewhat poorly drained soils are wet for significant periods but not all the time, and in Podzolic soils commonly have mottlings below 6 to 16 inches, in the lower A horizon, and in the B and C horizons.

Poorly drained soils are wet for long periods and are light gray and generally mottled from the surface downward, although mottling may be absent or nearly so in some soils.

Very poorly drained soils are wet nearly all the time. They have a dark-gray or black surface layer and are gray or light gray, with or without mottling, in the deeper parts of the profile.

Flood plain. Nearly level land, consisting of stream sediments, that borders a stream and is subject to flooding unless protected artifically.

GUIDE TO MAPPING UNITS

For a full description of a mapping unit, read both the description of the mapping unit and that of the soil series to which the mapping unit belongs. In referring to a capability unit or a woodland group, read the introduction to the section it is in for general information about its management. Other information is given in tables as follows:

Acreage and extent, table 1, page 5.
Estimated yields, table 2, page 43.
Woodcrops, table 3, page 44.
Suitability for wildlife, table 4, page 50.
Engineering uses of the soils, tables 5, 6, and 7, pages 52 through 65.

Map symbol	Mapping unit	Described on page	Capability unit		Woodland group
			Symbol	Page	Symbol
AyA	Aycock very fine sandy loam, 0 to 2 percent slopes	6	I-1	38	2o1
AyB	Aycock very fine sandy loam, 2 to 6 percent slopes	6	IIe-1	38	2o1
AyB2	Aycock very fine sandy loam, 2 to 6 percent slopes, eroded	6	IIe-1	38	2o1
Ba	Barclay very fine sandy loam	7	IIw-2	38	2w8
Bb	Bibb sandy loam	7	IVw-4	41	2w9
Ch	Chewacla loam	8	IIIw-5	40	1w8
Co	Coxville loam	9	IIIw-2	40	2w9
CrB2	Craven sandy loam, 2 to 6 percent slopes, eroded	9	IIe-3	38	3w2
CrC2	Craven sandy loam, 6 to 10 percent slopes, eroded	10	IIIe-2	39	3w2
Dr	Dragston loamy sand	10	IIw-2	38	2w8
Ex	Exum very fine sandy loam	11	IIw-1	38	2w8
Go	Goldsboro loamy sand	12	IIw-1	38	2w8
Jo	Johns sandy loam	13	IIw-2	38	2w2
Js	Johnston loam	13	IVw-4	41	1w9
KaA	Kalmia loamy sand, 0 to 2 percent slopes	14	I-1	38	2o7
KaB	Kalmia loamy sand, 2 to 6 percent slopes	15	IIe-1	38	2o7
KaD	Kalmia loamy sand, 10 to 15 percent slopes	15	IVe-1	41	2o7
KaE	Kalmia loamy sand, 15 to 25 percent slopes	15	VIe-1	42	2o7
Ke	Kenansville loamy sand	16	IIs-1	39	3s2
Kn	Kinston loam	16	IVw-4	41	1w9
La	Lakeland sand	17	IVs-1	41	4s2
Le	Leaf loam	18	IVw-2	41	2w9
Ln	Leon sand	18	Vw-1	42	4w2
Ls	Liddell very fine sandy loam	19	IIIw-3	40	2w9
Lu	Lucy loamy sand	20	IIs-1	39	3s2
Lv	Lumbee sandy loam	20	IVw-4	41	2w9
Ly	Lynchburg sandy loam	21	IIw-2	38	2w8
My	Myatt very fine sandy loam	22	IIIw-3	40	2w9
Na	Nahunta very fine sandy loam	23	IIw-2	38	2w8
Nf	Nixonton very fine sandy loam	24	IIw-1	38	2o7
NoA	Norfolk loamy sand, 0 to 2 percent slopes	25	I-1	38	2o1
NoB	Norfolk loamy sand, 2 to 6 percent slopes	26	IIe-1	38	2o1
NoC	Norfolk loamy sand, 6 to 10 percent slopes	26	IIIe-1	39	2o1
NrB2	Norfolk sandy loam, 2 to 6 percent slopes, eroded	27	IIe-1	38	2o1
Pa	Pamlico muck	27	Vw-1	42	4w3
Po	Pantego loam	28	IIIw-3	40	1w9
Ra	Rains sandy loam	29	IIIw-3	40	2w3
Rm	Rimini sand	29	IVs-1	41	5s3
RuA	Ruston loamy sand, 0 to 2 percent slopes	30	I-1	38	2o1
RuB	Ruston loamy sand, 2 to 6 percent slopes	30	IIe-1	38	2o1
RyB2	Ruston sandy loam, 2 to 6 percent slopes, eroded	30	IIe-1	38	2o1
To	Torhunta loam	31	IIIw-3	40	2w9
Tr	Troup sand	32	IIIs-1	40	3s2
WaB	Wagram loamy sand, 0 to 6 percent slopes	33	IIs-1	39	3s2
WaC	Wagram loamy sand, 6 to 10 percent slopes	33	IIIe-3	39	3s2
WaD	Wagram loamy sand, 10 to 15 percent slopes	33	IVe-2	41	3s2
We	Weston loamy sand	34	IIIw-3	40	2w9
WhA	Wickham loamy sand, 0 to 2 percent slopes	35	I-1	38	2o7
WhB	Wickham loamy sand, 2 to 6 percent slopes	35	IIe-1	38	2o7
WkB2	Wickham sandy loam, 2 to 6 percent slopes, eroded	35	IIe-1	38	2o7

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